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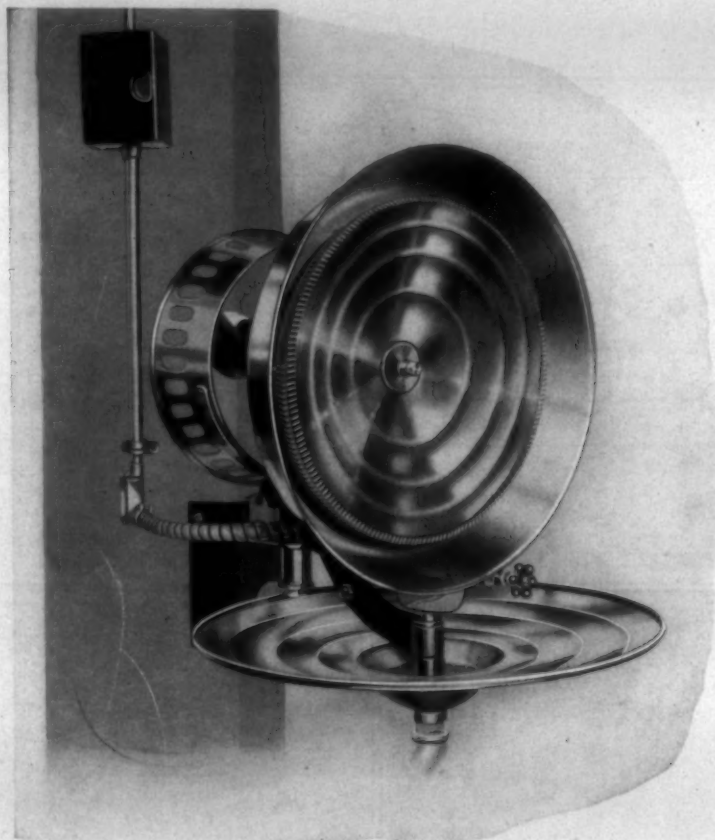
*Commerce*

# SOUTHERN TEXTILE BULLETIN

VOL. 30

CHARLOTTE, N. C., THURSDAY, APRIL 1, 1926

NUMBER 5



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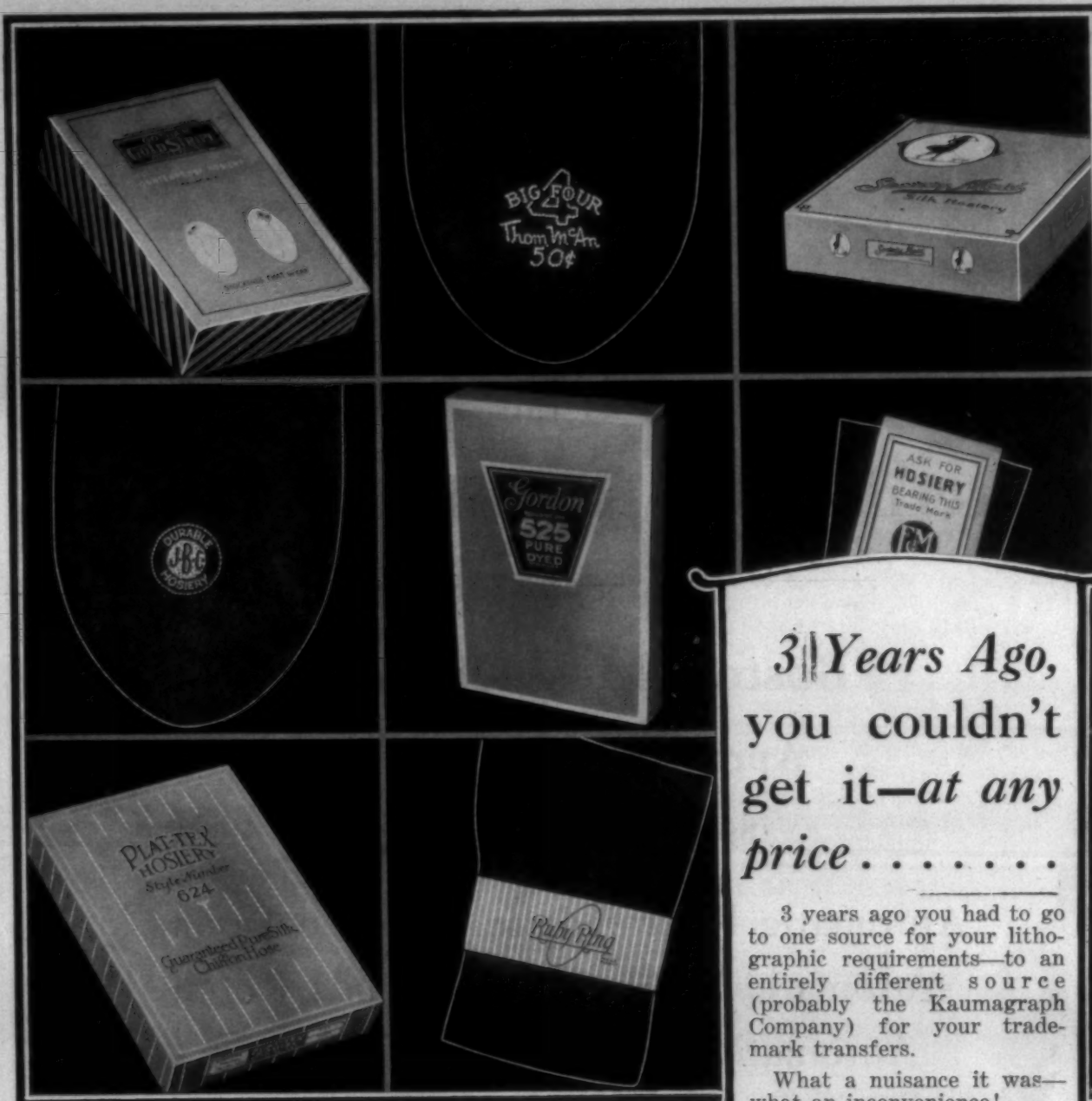


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Near Editor of

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# SOUTHERN TEXTILE BULLETIN

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VOL. 30

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NUMBER 5

## Research in Rayon Manufacture

THE following article, written by Dr. Harold Hibbert, professor of chemistry in McGill University, for the Daily News Record, discusses some of the problems that have been brought about by the development of rayon as one of the most important textile fibres.

The phenomenal development of the rayon industry during the last ten years, together with abnormally high profits derived therefrom, call for some analysis as to the future trend and possible new developments to be anticipated.

In the first place it is scarcely to be expected that prices can remain much longer at their present level and competition will, as a natural consequence, play havoc with the newer manufacturer unless he has developed a satisfactory economical process of manufacture and also an outlet for the product in his own mills.

There is no hiding fact that very large sums of money have been lost by cotton spinners, weavers and other industrialists, both in Europe and America, due to misleading information supplied to them by so-called cellulose experts and engineers, and in this connection possibly certain manufacturer of machinery have been no less culpable offenders.

### New Problems Faced.

The cotton manufacturer brought face to face with new chemical industry—for rayon industry cannot be regarded otherwise than this—has been only too willing to listen to the advice of men possessing but a limited knowledge of the manufacture of viscose silk, but who, nevertheless, are willing to design, erect and equip a factory irrespectively to final performance or anything in the way of guarantee.

The ability to make rayon (of a kind) is a task which any intelligent high-school boy could be taught to carry out in a few weeks. On the other hand, to manufacture rayon of the desired quality, uninterruptedly, and at a satisfactory profit, is a very complex process and one which can only be satisfactorily solved by a technically trained man, possessing a very sound knowledge, both of chemistry and engineering, and backed by years of experience in the entire operating technique.

The word "entire" is stressed be-

cause in so many cases coming to the writer's attention in England, Germany, France and America, failure has been courted, and obtained by placing entire reliance for the conduct of operators on an engineer or technical man acquainted only with one branch of the subject, for example, the textile as distinct from the chemical end of manufacturing. It is for this reason that the opinion may be expressed with considerable safety that many of the recent flotations in England, and some also in America, are predestined to failure.

To the trained technician familiar with the manufacture of rayon, it is a trite commonplace that the "heart of the business" lies in the perfection of the "chemical control." If this lacking nothing can be done to save the business.

### Two Classes of Materials.

To the scientific worker, the field of artificial silk manufacture comprises two distinct classes of material. To the first belong viscose; cuprammonium and Chardonnet silks; while celanese, or cellulose acetate silk, belongs to the second class.

The former are all included under the name rayon and are made by dissolving either cotton linters or wood pulp (the chemical name for which is cellulose) in certain chemical reagents. The thick viscous solution obtained is then forced through very fine orifices in the end of a metal nozzle into a solution of certain chemicals in which the solution of cellulose is coagulated and a series of continuous threads formed which are then collected either on a spool or in a centrifugal pot. The material obtained in all of these cases is merely a modified type of cellulose. On the other hand, celanese, which belongs to the second class, is a new type of chemical compound, obtained by subjecting the cotton to the action of chemical reagents which in part remain permanently attached to the cotton or wood pulp complex in the form of a new stable chemical derivative, namely cellulose (cotton or wood pulp) acetate. The fiber so obtained is no longer cotton and fabrics made from it possess properties differing fundamentally in physical and chemical character from a regenerated cellulose such as viscose silk.

It may be of interest to inquire as the characteristic qualities of

both classes of artificial silk in comparison with those of cotton.

### Luster is Big Feature.

In both cases the outstanding feature is that of luster. Neither in strength, durability, resistance to moisture and alkalies, bleaching agents, etc., can any one of them compare with cotton, especially with a mercerized fine cotton yarn.

In the case of rayon, the entire efforts of the manufacturer are concentrated upon the production of a material which will have maximum strength and elasticity when wet, and will possess uniform dyeing properties, and it may be boldly asserted that neither problem has yet been satisfactorily solved.

Both problems demand for their solution a highly developed theoretical knowledge of the botanical, colloidal and chemical properties of the cellulose complex.

One point seems to be well established and that is that the dyer often has been blamed for a damaged product when the quality of the original rayon was in reality itself responsible.

The question of unevenness in dyeing is associated with a variety of manufacturing faults, the secrets of which are partly known, partly unknown, to the individual manufacturers.

In a word, they are traceable to lack of uniformity and control in manufacture. From this point of view it is unreasonable to expect from either the average consulting chemist or manufacturer of chemical equipment, the necessary data covering the chemical control and other manufacturing data.

The only man competent to undertake such work and to advise is a chemical engineer, backed by a successful record of manufacturing experience.

### Keener Fight Likely.

In the near future competition is likely to be made keener so that any improvement with regard to wearing qualities, strength, elasticity, etc., is likely to prove of considerable value.

Along what line is such progress to be achieved?

In Europe it is evident the larger companies are working very actively on the subject and enlisting the services of the best intellects in the scientific world such as physicists, the colloid and organic chemists and

the bontanists. The problem is a difficult one on account of the highly complex character of the cellulose molecule. Rayon silk differs in character, physically, and in all probability chemically, from the original raw material (cotton; wood pulp) and the problem to be solved is either to conduct operations so that the change is reduced to a minimum, or by a subsequent treatment to nullify the draw-backs found in the resulting rayon product. Further research on the X-ray analysis of fibers will probably assist largely in the solution of these problems, especially when backed by new fundamental chemical knowledge of the cellulose molecule.

The future may be expected to evolve a new rayon in which the affinity of this textile for dyestuff is much more pronounced and its loss in strength when wet will be less pronounced.

In view of the fact that what is primarily desired is a fabric with all the good qualities of cotton, but a more highly developed luster, it seems probable that some method of surface treatment will be developed in which only the surface and not the main body of the fiber has been changed.

### Use of Artificial Silk and Wool.

Rapid progress is being made in Europe in connection with the use of artificial silk for the production of woollen fabrics, the cheapest kind of scrap and manufactured rayon being used for this purpose.

Another drawback of cotton, namely its poor insulating quality, is being overcome to a considerable extent by the new method of "wool-enizing" cotton and rayon, and indicates the possibility of new fields of modified fabrics.

Recent developments also point to the discovery of new types of rayon possessing more of a "Matt" appearance and the scroop of real silk. Such properties can be imparted, as witnessed by the writer, to the ordinary type of viscose silk.

Probably the most interesting of the recent developments in rayon manufacture has been the successful use of immature viscose solution for the production of high-grade silk of both coarse and fine count denier. This enables the manufacturer to save a large amount on capital outlay for machinery and installation and also leads to a marked de-



crease in the cost of production.

As the technique of rayon manufacturers improves, there are gradually being evolved a number of special types applicable to the different branches of the industry, the properties of a rayon silk for weaving very different from those demanded by the knitter. There seems to be in fact, a marked tendency abroad to develop the knitting side of the industry at the expense of woven goods.

#### Cuprammonium Process.

In the cuprammonium process method, the cellulose first is dissolved in a solution of copper in ammonia. The solution is then forced through the nozzle (spinnerette) into a coagulating bath.

Until recently, it was thought that only cotton linters could be employed, but large quantities are now being made from wood pulp.

The cost of recovering the copper and ammonia always has been a considerable drawback, but these now seem to have been largely overcome. One important advance which has been made in the fields of cuprammonium silk production is in the rate at which the fiber can be produced. With the newer technique, it is possible to run the coagulating process of fiber formation at a much higher rate than anticipated.

Perhaps one of the most far-reaching achievements in the recent developments of synthetic fibers has been the establishment of the interchangeability of wood pulp and cotton for such manufacture. This has been rendered possible by the enthusiastic cooperation of the scientist and technical chemist. The results of this are far-reaching in character. It means that those countries devoid of cotton, but rich in forest (wood pulp) resources can now develop a profitable domestic and foreign market for synthetic fibers. America, through her neglect of reforestation has thus deprived herself of a most valuable source of raw material and it is largely in consequence of the possibility offered to European nations of being able to free themselves from the domination of America in the field of raw cotton which has stimulated European research and led to the recent remarkable developments.

#### Celanese and Other Types.

Recent experiments carried out in Germany appear to indicate the possibility of substituting wood pulp in large measure for cotton linters in the manufacture of "celanese" type of fabrics.

The recent extensive research carried out in this field indicates the probability of new methods of production at a lower cost, especially if the preliminary work on the utilization of wood pulp should prove successful commercially.

It is not to be expected that the cost of production of acetate silk can ever be lowered sufficiently to compete with that of viscose, and its many superior qualities will doubtless always command for it a higher price.

There is apparently a wide field of awaiting development in the art of printing of rayon and celanese on cotton fabrics, and various methods

and applications are being tried out with a view to the production of a variety of new effects. Here especially, is a development which requires the services of the highly trained cellulose chemist. It is possible for him to manufacture a variety of cellulose derivatives, somewhat too expensive perhaps for the manufacture of a fiber, but particularly useful and capable of playing a new and important role in the production of special printed effects.

#### Rayon With Cotton Competition.

The rapid improvements being made in the manufacture of viscose silk, with the probability of a considerable decrease in the manufacturing cost tend more and more to bring the material into active consumption with the finer grades of cotton. This competition can be, and probably will be, met by the discovery of new processes for mercerization and for altering the surface character of the cotton, whereby both the luster and affinity for dyes are increased. There seems already, in fact, a more or less marked tendency to move across from the direction of the very high shiny luster towards a more subdued appearance.

Until the marked weakness shown by viscose silk in the wet state has been overcome, its sphere of further competition with fine cotton necessarily will remain restricted.

To anyone acquainted with the history of the scientific and technical development of the art making rayon, the outstanding fact is the negligible contributions made by American scientists and technical workers.

The earliest development we owe to the work of a brilliant French scientist, Count de Chardonnet, who was the first to manufacture artificial silk, using as his raw material nitrated cotton. This was further developed by a German scientist, Lehner, and it was another German scientist, Pauly, who developed the cuprammonium process. The viscose process owes its origin to the scientific investigation of the English workers, Messrs. Cross & Bevan, while the Celanese process is essentially that developed by Swiss chemists, H. & C. Dreyfus, assisted by their coworkers, A. Clarel and J. A. Briggs.

It becomes of interest to ask why it is that America has taken so little part in the fundamental scientific work through which the newer processes have been developed and in which they are founded.

#### "We Are Idea Adopters."

The answer is to be found in a recent pamphlet by Hugh Farrell, entitled "What Price Progress." This author states:

"In this country (America) we are expert technologists, ready adapters and adopters of other people's ideas, but the world credits us with little in the way of fundamental contributions to progress. This is intolerable, not only from the standpoint of national pride but also from the standpoint of national interest. This country cannot longer risk its future upon the chance that it will always be able to 'grab off' any worthwhile ideas that appear in the world."

Mr. Hoover also has recently stated:

"The United States occupies a position far in the rear of the majority of European nations. A list of the awards of the Nobel prizes to men of various nationalities reveals the small proportion of first minds that we support.

"Although we have an increase of from 100 to 500 laboratories engaged upon each for application of known scientific fact and knowledge, we fail to realize fully that all of these are dependent upon the raw material which flows from the laboratories of pure science in which our nation today is greatly deficient.

"The day is gone by when we can depend very much upon consequential discovery or invention being made by the genius in a garret. A host of men, great equipment, long, patient scientific experiments to build up the structure of knowledge, not stone, but grain by grain, are today the fundamental source of invention and discovery.

#### "World Depends on Scientists."

"The progress of civilization, as all clear thinking historians recognize, depends in large degree upon the increase and diffusion of knowledge among men; while the improvement of some machine or process is of great value to the world, the discovery of a law of nature applicable in thousands of instances and forming a permanent and everpresent addition to knowledge is of far greater advance.

"There is no price that the world could not afford to pay to those who have the originality of mind to carry scientific thought forward, and they wish no price. They need opportunity to live and work. Only thus can they be reasonably expected to make the best use of their willingness to advance knowledge and, therefore, civilization, without thought of personal gain."

There is no doubt but that in view of the above statements and the more welcome sympathetic attitude recently shown by cabinet officer, industrialist, and consumer alike, regarding the necessity for additional fundamental research, the time is ripe for a more extensive development of knowledge of cellulose chemistry in the American colleges and universities.

In Europe, the government has not hesitated to assist such a movement financially and the industry is also contributing considerably to its support. Thus, in spite of the marked depression in the textile industry in England during the last four or five years; of the precarious economic state of Germany's industries; of the retarding influence to which war-torn Europe has been subjected, the various nations have, nevertheless, in spite of these serious economic conditions, found time and money to equip institutes for the prosecution of fundamental research on cotton, linen, silk, wool, wood pulp, etc.

#### Meaning of Research.

Just a word as to the meaning of fundamental research about which much misconception apparently exists in the popular mind.

A simple illustration will probably do much to explain this. The scientist

in his laboratory goes to work and as a result of considerable effort and application finds there are certain laws governing the rate at which a liquid changes into the state of vapor. For example, this change takes place much more readily when we reduce the pressure above the liquid. In other words, a law was established which taught that it requires much less heat to evaporate a liquid under reduced pressure. This constitutes fundamental research.

The chemical engineer and technician then apply this law industrially to the evaporation of sugar solutions, etc., in order to operate as economically as possible. The operation may be carried out in a variety of ways; in different types of apparatus, in all of which, however, the same fundamental law relating to vapor pressure is employed. This is termed technical or "industrial research."

If we wish to analyze the water or the solutions to be evaporated, which represents a much smaller task than either of the other two, this is what is termed "laboratory control."

The majority of the scientifically trained chemists turned out by American colleges and universities has belonged to the last class; a limited number has been trained for the second class; while the number capable and willing to devote themselves to work embraced under "fundamental chemical research" has been proportionately small.

#### Due to Misconception.

Apparently one reason for this has been the confusion not only in the mind of the public, but also on the part of the industrialist, the banker, and the corporation president, as to the relative roles and values to be attached to the three classes and especially in the belief that the research chemist was essentially an analyst, whose essential duty consisted of chemical control.

The enormous strides in the recent developments of the radio industry, and the electrical industry in general, have only been possible because of the existence of a very large amount of fundamental work in physics carried out in American universities and colleges, equally with that developed in European institutions.

Another reason why the study of cellulose chemistry (that is, the scientific knowledge relating to artificial silk) cotton, wood pulp, etc., has been neglected, lies in the fact that the attention of the organic chemist during the last 40 years has been concentrated entirely on attempts to manufacture new coal tar products, either in the form of dyes or medicinal products, photographic developers, etc., which was a necessary consequence of the leadership attained by Germany and the enormous influence exercised by her in this field.

For this reason, little or no interest has been taken in the chemistry relating to American natural products, such as cotton wood, starch, sugar, alcohol, etc., and the possibilities of utilizing these for the production of manifold products useful to

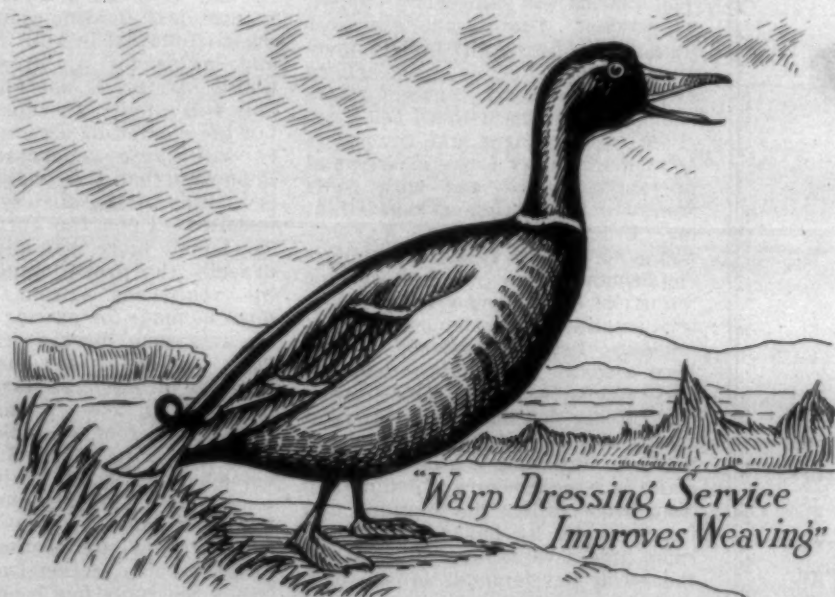
(Continued on Page 30)



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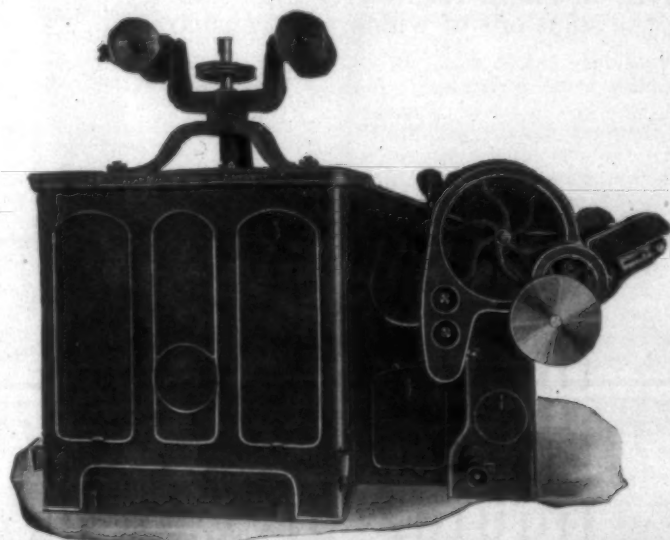
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## Ventilating the Dyehouse

A DYEHOUSE, cleared of fog, moisture and the uncanny drip, drip from the ceiling is the wish, expressed and unexpressed of every worker in the industry. Such a dye room would seem, no doubt, like a sort of Beulah-Land. It is, as a matter of fact, only within the past decade that any concerted attention has been given a subject that has long been a source of trouble and annoyance both to the workers and to the manufacturers of textile goods. In recent years improvements in methods of dyeing have involved the need for adjustment of ventilating systems, says A. S. Capwell in the Canadian Colorist and Textile Processor.

In not a few instances difficulties in obtaining a properly finished piece of cloth have been encountered due to lack of proper ventilation and the presence of excessive moisture. In the past, problems of this kind have been looked upon as necessary evils and hence tolerated accordingly. Undoubtedly the most troublesome factor from this angle is the damage done the finer yarns of cotton and flax by water dripping from the ceilings and staining the articles thereby depreciating the value of the finished product. Due to the excessive humidity and generally high temperature, dye house and bleachery operatives have uncomfortable enough conditions without being exposed to the danger and discomfort of rooms too foggy to see clearly, and prevent accidents and with roofs from which a continuous rain is falling. From both a hygienic and economic point of view, correct air conditioning here promises greater industrial health and greater industrial wealth and greater personal efficiency. In some instances it has been actually impossible to work in these rooms because of the dense fog and rapidly floating vapors. It is in rectifying cases of this kind that the modern ventilating engineer can lay claim to some measure of distinction. And in controlling the humidity and temperature, he has added at the same time a valuable chapter to the industrial development of the day.

### Proper Temperature.

The proper temperature to maintain in the average dye house or bleachery plant is somewhat open to debate. Due to the fact that the worker in these places has become used to a high temperature and high humidity, the ordinary rules of "comfort zone" do not apply. A temperature ranging between 80 and 90 deg. f., is common where dye house workers are employed and any reduction is apt to be a subject of complaint. Because of the two existing conditions of high temperature and great quantities of mist and vapor prevailing, the humidity is necessarily high. While air at 60 deg. f., can only absorb about 5.8 grains of aqueous vapor per cu. ft., at 80 deg. f., it can absorb 13.2 grains (complete saturation) per cu. ft. It therefore, follows that when saturated air is cooled, there follows a separation of water in the form of a fog or mist.

There are two major problems

fronting the engineer in undertaking the ventilation of a dye house or bleachery; first, the removal of large volumes of steam and water vapor given off by the vats, tubs, etc., second to facilitate its removal in such manner that the moisture will not condense on the cool interior surfaces of the building, thereby causing dripping on the textiles and rapid depreciation of the building as well. In more ways than one, the ventilating requirements for each dye house constitute an individual problem to which no general rules or specifications can be applied. On the other hand, some basic principles are always applicable, although the details may vary considerably in actual practice.

The first step, for instance, in the solution of any dye house ventilating problem is to determine the volume of air necessary to produce the required air change. Just what this will be will depend almost entirely upon the location and number of machines in the room, the greater the number the more frequent being the air change required. In installing any ventilating apparatus it is of some importance if proper efficiency is to be attained, that the natural draft tendencies in the building be followed in both bringing in and taking the air from the dye house. If this is not followed, not only will a lower air capacity result, but the conflicting air currents likely will cause condensation. More important than this phase, however, is a study of the duct system to be installed. Upon the correctness of this layout, more than anything else, depends the proper functioning of the ventilating system. Provision must be made for passing dry, warm air over each machine from which vapor and mist is coming and to form an insulator of warm air over the cold surfaces of the building, such as the roof, on which condensation tends to settle. In this connection it is worth noting that in some plants a double roof has been built and warm air passed between the inner and outer sections. In other instances, this sectional opening between the roofs has been insulated.

At the same time all natural air currents must be observed. Where there is a strong natural draft, for instance, such as over a tub or vat, this condition should be utilized and the exhaust located directly above if possible. In addition to the above factors governing successful installation of ventilating apparatus, there must be considered such points as the amount of work handled by each machine, location of all roof timbers, type construction of the roof and walls of the building, etc. In other words, it must always be borne in mind that no dyehouse problem can be solved successfully without first having an intimate knowledge of all conditions as they exist, and these can be obtained only by making a first hand study of each case as it arises.

### The Equipment.

The principal parts of the dye-house and bleachery ventilating apparatus are the heating equipment, (Continued on Page 30)



## *The new dull finishes can be easily produced*

BRIGHT days lie just ahead for the dull-finish fabric. Wearied of over-much luster, the public is now veering, as usual, toward the other extreme. It wants richness still, but a richness that is more restrained, more subtle.

To secure the desired effects, alert manufacturers are using Celanese brand yarn. Finishes of any desired degree of dullness are imparted to the fabric, right at the dyehouse, in a manner simple, sure, and exceedingly economical. These finishes are permanent under all conditions of service. *They can be applied to Celanese brand yarn, alone.*

Patterns in self-tones may easily be secured by passing the dull-finished fabric under a hot printed roller.

We shall gladly provide detailed  
information upon request

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BRAND YARNS

*The* AMERICAN CELLULOSE & CHEMICAL  
MANUFACTURING COMPANY, *Ltd*

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RODNEY HUNT MACHINE COMPANY



Booklet No. 1119-A

## Silk Reel Machines

Double the capacity  
of other types

RODNEY HUNT MACHINE CO.

53 Mill Street, Orange, Mass.

RODNEY HUNT

## The Superiority of ALUMINUM PAINT

for the interior walls, ceilings, roofs, tanks, towers and fences of industrial plants has been proven and today many of the larger textile mills of the South are specifying it for these purposes.

To mention only one feature, Aluminum Paint gives to mill walls the same light refraction that two coats of the so-called mill whites or mill enamels give them, and at the same time diffuses a soft, pleasant light, easy on the eye, and is never trying on the workers' dispositions.

Aluminum Paint can be applied with either a brush or gun.

It must be borne in mind, however, that to obtain the best results

### "WATCO 787"

#### Aluminum Mixing Varnish

is the vehicle that should at all times be used.

Tests made during the past few years by the largest users of Aluminum Paint have proven conclusively that the vehicle should be one that is water-resisting, and should be a varnish that would show no whitening after the most severe water tests. In these tests, where several varnishes were used, "Watco 787" Aluminum Mixing Varnish has stood out superior to all others.

Information that will help you on your next paint job will be gladly sent on request.

## Wm. Waterall & Co., Inc.

Industrial Paint and Varnish Specialists

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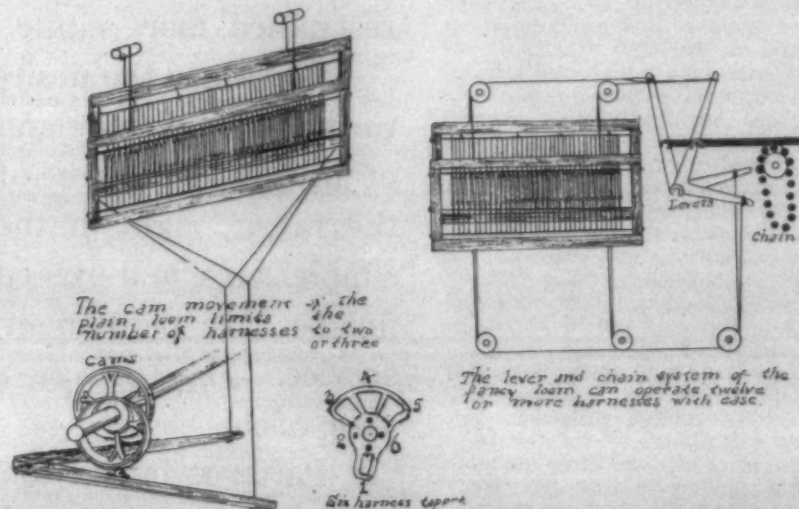
## Manufacture of Fancy Goods

This is the second of a series of articles on fancy weaving. The next will appear in an early issue.—Editor.

### What is Fancy Weaving?

Every variety of fabric, whether plain or figured, is made by crossing and interlacing two separate series of threads together by means of harness and shuttle on a loom; or by looping and interlacing a single thread into a texture by means of a system of needles on a knitting machine. If a woven fabric is analyzed it will longitudinally through the piece, all of which may or may not be white or colored, whether or not the finished piece is to be of the plain or the fancy class. That is, the body of threads running in this direction and composing the warp may be all white or other color and woven plain on a plain two or three harness loom with a single shuttle, or figured designs may be produced by weaving that

for fancy weaving owing to the increased number of harnesses and added friction. Also in the warping room a little more sizing is commonly used to stiffen and solidify yarns that may have to stand more stress in the weaving of a fancy design than in weaving a plain one. Of the four methods of weaving the yarns in order to produce something more than a plain weave, the first comprises those designs which are worked out entirely in the loom by utilizing variously colored threads in both warp and filling. The second method includes those designs made by combining two or more weaves with a view of getting variations in the pattern with warp and filling all one color. The third method includes those fancy effects woven with a weave combination and a color combination of yarns in the warp and the filling. The fourth methods comprises those fancy weave effects produced with warp and filling one color but with cer-



same warp in a fancy loom with eight, ten or more harnesses and a single shuttle containing thread of the same color. The fancy effects would be derived entirely by manipulation of the yarns. A fancy fabric would result in lieu of a plain one.

Or a fancy weave might be obtained by using variously colored threads in the warp and still weave that warp on the plain principle with two harnesses and one shuttle. The second system of threads compose those which extend transversely in the piece and these too may be arranged in one color or mixed colors, like those of the warp, according to whether plain or fancy goods are wanted.

### Four Methods of Weaving Fancy Goods in the Loom.

There are four methods by which fancy effects can be made in the looms, for it is in the weaving department in which the greatest distinction between a plain goods and a fancy goods mill exists. Yarns for plain goods are prepared in the carding, spinning and warping departments the same as for fancy goods, except that in some instances it is necessary to put a little more twist in the warp yarns intended

tain figured designs executed by harness or shuttle manipulation. The cam or tappet motion of the harnesses of the plain loom limits the number of harnesses employed, also the movements of the harnesses so that all of these methods of weaving cannot be performed on a plain loom.

Those patterns of the first method can be woven on a plain cam loom, with its limited number of harnesses and movements of those harnesses, so far as the stripping is concerned, as the stripes are the results of introducing the variously colored threads into the warp when making the warp. Some plain looms are equipped with a two-box shuttle motion on one or both sides, in which event the designs of this class may also contain two colors in the filling and a chequing pattern produced. But the fancy weaves of the second method will require the use of a fancy loom with its twelve or more harnesses in order that two or more weaves may be combined, or a single intricate weave used, to execute the pattern. As the fancy loom is usually provided with a four box shuttle motion at one or both ends, it is possible to introduce that many colors in the filling, if

(Continued on Page 29)



## Meeting of Southern Yarn Spinners' Association

The annual meeting of the Southern Yarn Spinners Association, held Tuesday in Charlotte, was unusually well attended. The meeting was largely devoted to a discussion of trade conditions. It was brought out that the mills are much better sold ahead than has been generally believed, the amount of business on hand being considerably in excess of most market estimates. It also showed that the spinners are not accumulating stocks of yarns, and that they are strongly opposed to making stock yarns at this time.

A resolution was passed declaring that spinners should limit production to actual orders at remunerative prices and should make no yarns for stock.

Present yarn prices were characterized as very unsatisfactory and it was the sense of the meeting that orders be accepted only at prices that are above the cost of production.

A. M. Fairley, of Laurinburg, N. C., was re-elected president. Charles Iceman, of Monroe, N. C., and W. B. Moore, of York, S. C., were elected vice-presidents.

The director elected were M. W. Darby, Florence, Ala.; A. A. Shuford, of Hickory; A. F. Garrou, Valdesse, N. C.; R. L. Huffine, Hope Mills, N. C., and Charles Iceman.

In his annual report, C. Singleton Green, secretary of the Association reviewed conditions that have prevailed in the yarn markets for the past year. He stressed the fact that radical changes have taken place in yarn purchasing methods and that spinners must operate their plants in keeping with the changed methods of distribution. Mr. Green's report, in part, was as follows:

### Secretary's Report.

The yarn business for the year 1925 was on the whole more satisfactory than for the previous year. In January 1925 prices less freight, commission and discount compared with cotton plus waste showed a manufacturing margin representing about replacement value. The decrease beginning in February finally reached its low point in June with so small a manufacturing margin as to show a material loss on all sales accepted at prevailing prices. During the summer months and the early fall months, while the price of cotton and yarns was below the level in January, the manufacturing margin showed a gradual increase, finally reaching a figure considerably better than replacement value in October. For the month of December prices of both cotton and yarns reached the low point for the year, but in spite of that the manufacturing margin represented almost replacement values. Operations were materially curtailed during the summer months for lack of business, and in the early fall months and until almost the end of the year by a shortage of power occasioned by the drought. The fact that although both the price of cotton and yarns were materially lower in October than at

the beginning of the year and that the manufacturing margin should have been greater in October than during the preceding portion of the year, indicates beyond question the material benefit that the spinners experienced due to the enforced curtailment.

We believe that if curtailment advocated by the Association had been more generally practiced beginning earlier in the year, that a higher level of prices could have been maintained, and more profitable operations would have resulted. It was not however until prices had receded materially below the cost of production that curtailment was generally effected.

The present condition of trade is stagnant, with but little demand and prices below cost of production.

The entire method of distribution will have to be reorganized to meet changed buying conditions. Conditions and methods of purchase have made a radical change, and the fact has to be realized that the hand to month buying has become a permanent factor, and not a mere temporary condition. Manufacturing operations will have to be regulated in accordance with these changed conditions.

While purchases are in small lots, and business is reported quiet, the total aggregate of purchases show that the consumption of cotton goods for the year 1925, according to government statistics, were fully up to its normal quantity. It now is a question of manufacturers operating and regulating their operations to suit the changed method of purchasing. To operate at full capacity and accumulate stocks in the hope of selling them later at advantageous prices is to invite disaster, as any accumulation of stocks tends to depress an already sluggish market.

### Hearing on Ivanhoe Mills.

Raleigh, N. C.—A hearing to determine whether or not the Ivanhoe Mills, which is now in the hands of a receiver, owes the government a large sum in excess taxes was begun Tuesday before J. P. Cheshire, Jr., referee.

The government claims that incorrect returns were made by the company and that the government has a claim against the receivership for slightly more than \$200,000. To this is added a 50 per cent penalty, making the total approximately \$310,000.

Auditors who have examined the books of the company for the receiver claim that correct reports were made the government and that it is due nothing in taxes.

### Fire at Ozark Mill.

Fire at the Ozark Mill, Gastonia, on Tuesday did damage estimated at around \$10,000. The fire damaged the building and a quantity of yarns and water damage was done to yarns and some of the machinery.

# Do you use

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# Leatheroid Line

Sold Through Southern  
Supply Houses

## ROGERS FIBRE CO.

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1024 Filbert St., Philadelphia  
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**WAREHOUSE CAR**

No. 2

Body—Leatheroid inside, steel outside, fastened together with rivets 2 1/2" apart. Top Rim—Hard wood covered with steel. Bottom—Heavy Leatheroid angles covered with steel, fastened with solid rivets and bolts. Bottom—Wood, with 3 hard wood cross cleats. Casters—Rogers' self-oiling with 4 1/2" iron wheels. Rubber tired, Devine or Fibre wheels if desired.

Stock Sizes

26 x 14 x 26	44 x 22 x 26
30 x 16 x 26	48 x 24 x 26



**SEAMLESS ROVING CAN**

No. 1

Patented roll top—See page 6 for details. Six-inch fibre kicking band. Steel bottom and steel chime—securely fastened with solid rivets.

Stock Sizes

10 x 26	12 x 26
---------	---------



**STOCK OR MILL BOXES**

No. 2

Body—Leatheroid inside, steel outside, securely fastened with rivets. Top Rim—Hard wood covered with steel. Bottom—Heavy Leatheroid angles covered with steel, fastened with solid rivets and bolts. Bottom—Wood, with 3 hard wood cross cleats. Casters—Rogers' self-oiling with 4 1/2" iron wheels. Rubber tired, Devine or Fibre wheels if desired.

Stock Sizes

26 x 14 x 26	44 x 22 x 26
30 x 16 x 26	48 x 24 x 26



**STORE OR MILL BARREL**

Body—Heavy Leatheroid. Top Rim—Heavy steel ring, solid riveted. Kicking Band—Four-inch Leatheroid. Bottom—Wood, secured by flanged iron angle, riveted through two thicknesses of Leatheroid and heavy steel chime. Rivets—"Cut-in," malleable iron. Chime size 20 x 20.

Desirable Sizes

16 x 26	20 x 26
18 x 26	24 x 26
20 x 26	26 x 26



**LEATHEROID BASKETS**

Body—Leatheroid. Top Rim—Heavy steel, fastened with rivets. Handles—"Cut-in," malleable iron. Kicking Band—"3" Leatheroid. Bottom—Steel flanged and riveted through two thicknesses of Leatheroid and heavy steel chime. Rivets—"Cut-in," malleable iron. Nesting frame (to prevent sticking).

Capacity	Size	Capacity	Size
1 bushel	16 x 12 1/2	3 bushels	20 x 22 1/2
1 1/2 "	18 x 14	4 "	22 x 24
2 "	18 x 18 1/2		



# Practical Discussions By Practical Men

## Weaving Cloth Three Times the Loom Width.

Editor:

In order to weave cloth three times the width of the loom, what is the movement of the shuttles between the ends. In other words, how should this be laid out on paint paper? Dunno.

## Testing for the Correct Twist.

Editor:

Will you please advise me through your Discussion Department, what is considered the best way to ascertain the correct twist being put into my yarns? Calif.

## Life of Shuttle.

Editor:

What is the average life of a shuttle in a 40-inch bobbin change-loom, running 170 picks per minute, making osnaburgs using No. 12 yarn in a 14% dent reed.

## Setting Comber for Oiled Cotton.

Editor:

Will some reader please tell me the proper settings for a "Nasmith Comber" in order to run oiled cotton. I have experienced a little trouble with the cotton clinging to the brushes. The suction doesn't seem to take it off readily. How close in should the bristles be set? Nasmith.

## Taking Off Separators.

Editor:

Please allow me space in your Discussion Department for the following questions:

I have the Whitin spinning frames and my filling frames have separators. I wish to take the separators off. I would be glad to hear from several men on this, as I do not like separators on filling frames. I have been forced to use them in order to get a traveler that would not be too heavy at the top of the bobbin.

I have a 2½-inch gauge frame, No. 2 flange ring, but am going to put on the No. 1 flange ring if I can get away from the separators. The distance from the steel roll to guide wire is 5¼ inches; from guide wire to top of bobbin, 2¼ inches; from steel roll to bottom base rail 17¼ inches; gauge of frame 2½ inches. I can raise spindle base rail ¾ inches or let it down ¾ inches. I can raise the guide 1 inch or lower it 1 inch.

I want to know how to get the separators off and not have so much balloon on ends so they will not lash together. What would be the best traveler to use, round point or square point on coarse numbers, say 1s or 15s filling and 16s or 17s warp and 23s warp and 26.50s filling. If any further information is wanted

*The Practical Discussion Department of the Southern Textile Bulletin is open to all readers whether they are interested in seeking information on technical questions or are willing to help "the other fellow" who has experienced trouble in some phase of his work.*

*The questions and answers are from practical men and have often proved extremely valuable in giving help when it was urgently needed.*

*The interchange of ideas between superintendents and overseers develops a great deal of worth while information that results in much practical benefit to the men who are concerned with similar problems.*

*You are invited to make free use of this department and to join in discussing various problems that are mentioned from week to week. Do not hesitate because you do not feel that you are an experienced writer. We will take care of that part of it.—Editor.*

regarding this change address me through the Bulletin.

Spinner.

## Answer to Howler.

Editor:

No. although the traveler does not put in the twist it has plenty of work to do. It does three very important things. First, it is a guide through which the yarn passes so that it will be wound correctly on the bobbin. Second, it acts as a tension device according to the weight of the traveler, by dragging on the yarn. Third, the traveler is also a regulator or perfect balance rotor as it were in that the speed of same is faster or slower on account of the hills and valleys on the bobbin, the different size of the bobbin, the thick and thin places in the yarn, also the variation in the number keeping also the atmospheric conditions.

Again as the ring rail goes up and down, it shortens the length of the yarn between the bite of the roll when the rail goes and, and it lengthens the distance when the rail goes down. During all of these variations the dependable little ring traveler performs the important office of being the balance wheel regulator and the piece maker for the whole business.

Incidentally, it performs another duty. It also prevents large bunches from being wound onto the bobbin.

Traveler.

## Answer to Howler.

Editor:

Please allow me (a weaver) space to answer "Howler," in regard to what traveler does.

**Here it is: The traveler holds the yarn away from contact with the spindle, while it is being spun.**

This may need some elaborate explanation, to get some of the old life-time spinners to understand why the traveler does not put in the twist.

Some of us can remember seeing our mothers or grandmother's spin on the old home-made spinning wheel, containing a wheel and band connected to a spindle. Now to explain this so the old fellows can see into it, it is understood that the wheel gave speed to the spindle. Now, in like manner, the drum on a

ring frame, gives speed to the spindle. When the ring frame was invented, there had to be some way to hold the fibers away from the bobbin and spindle while being twisted. You know mother used to hold the roving off at an angle so that it would not hit the bobbin or spindle, and she turned the wheel long enough to twist it like she wanted it and then wound it on the bobbin slowly as she stepped forward. While she was twisting the roving she drew away from the spindle at a certain angle and the drawing process of the yarn was accomplished in her moving away and staying at that distance till she had turned the wheel long enough to give the yarn the desired twist.

The ratio of the speed of the spindle to the speed of the front roll determines the twist in the yarn. To change the speed of either the front roll or the spindle will change the twist per inch inserted. The spindle having a certain speed and the front roll delivering a certain number of inches of fibers to the minute, will produce a certain number of turns of twist per inch in the yarn. If the front roll speed is decreased there will be more turns of twist in the yarn to each inch delivered, because the spindle, which inserts the twist is still running the same speed, and is getting a shorter length of yarn in the same time. Again, if the speed of the spindle is decreased, without changing the speed of the front roll, there will be less turns of twist because the front roll which delivers the fibers to the spindle is still delivering the same number of inches of stock, while spindle is putting in less turns of twist owing to its decreased speed.

Don F. Ano.

## Answer to Assistant.

Editor:

In answer to "Assistant," regarding bag and tube weaving, I am glad point paper.

Figure Number 1 shows how the plan to weave tubular goods will look on designers point paper. It will take at the least four (4) harnesses as shown by the square marked B. The square marked A shows the design or the manner by which the ends will cross one another or weave. The figures 1, 2, 3 and 4 at the bottom, indicate that there are

only four ends in the pattern complete. The figures 1, 2, 3, and 4 from the bottom to the top of the A square, indicates that there are only four (4) picks of filling to complete the pattern. The crosses shown in the smaller squares within the division or section square A, shows how many warp ends will appear above the filling, or, in other words, under how many warps ends the filling will pass at each of the four (4) picks. The section square marked B, shows the harnesses marked 1, 2, 3 and 4 and the order by which

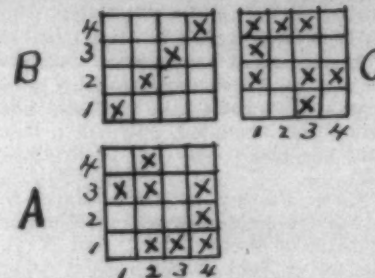


Figure 1

the same process must be repeated until all of the warp ends are drawn—the warp ends should be drawn. For example, one end will be drawn-in into harness number one and end end into each of the succeeding harnesses Nos. 2, 3 and 4. After this,

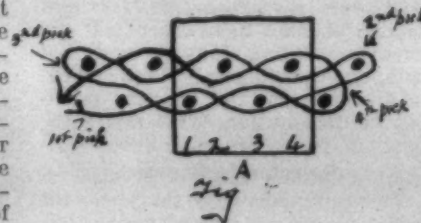


Figure 2

in. The section square marked C, shows the harness lifting plan. The figures show the bars Nos. 1, 2, 3 and 4. The crosses indicate the order in which the little wheels or pins must be put on and arranged to work the levers and which in turn will cause the right harnesses to be raised at the proper time.

For example, bar number one has three pins indicated by the crosses. When this bar is moved forward it will cause harnesses Nos. 2, 3 and 4 to be raised. In the section square marked A the corresponding crosses Nos. 2, 3 and 4 show that these warp ends will be raised and the filling be passed under the same.

Figure Number 2, shows the A square in a different form, and also a section of the warp ends indicated by the dots extending through and outside of this square. The serpentine lines graphically show the movements of each of the four picks picks necessary with which to weave a complete pattern. Bags pillow tubing, and all other tubular goods, are woven in this manner. When it is desired to close the cam which is switched aside, and the bag



end will be woven plain for the space of about one inch or so.

Above is a brief explanation of the of the layout complete for weaving tubular fabrics.

H. D. MARTIN.

### Textile Research Is Called Pitiable

Providence, R. I.—The Government research work in the laboratories of the Bureau of Standards in Washington is "pathetically small," according to Dr. G. K. Burgess, director of the bureau, who addressed several hundred members of the American Society for Testing Materials at a dinner held in the Biltmore Hotel here. "This is," he said, "in spite of the fact that the textile business of this country runs into billions of dollars annually."

"Our laboratories for research work in rubber, paper and textile work are small," Dr. Burgess said, "and especially the textile laboratory. With the industry putting out goods valued between \$9,000,000,000 and \$10,000,000,000 a year, I find the Government is spending about \$2,000 for research work. The laboratories are pathetically small."

In order to remedy the situation, Dr. Burgess said that recommendations will be made that more money be expended in the textile research work so as to bring it somewhat commensurate with the value of the industry itself.

"In our work at the Bureau of Standards," Dr. Burgess told the society members, "we are trying to

strike a balance, but we have been unable to do so in the textile field. Our work in industrial research has been increasing throughout the past year and we hope to do even more next year. I believe that the work in these Government laboratories, your laboratories will continue to be done in the spirit of co-operation with engineering societies, as it has been in the past.

Dr. Burgess was the principal speaker on a programme which included Richard B. Watrous, secretary of the Providence Chamber of Commerce, and Russell Grinnel, of the Grinnel Company. Brief addresses were also given by C. L. Warwick, secretary of the American Society of Testing Materials, and J. H. Gibboney for president of the society. The election will take place at the annual meeting of the society in Atlantic City in June, where more than 3,000 members will be present. The dinner was presided over by Prof. W. H. Kenerson, of Brown University's engineering department.

### North Had Better Wake Up, Says New Englander

(Greenville Daily News)

"If anybody tells you the South needs to wake up, you tell them that it's the North and not the South, that had better open an eye or two," said Henry B. Estes, veteran New England textile manufacturer who was in Greenville yesterday on his first trip to the Southern States.

Mr. Estes, who is treasurer of the great Continental Mills at Lewis-

ton, Me., is touring the Southern textile region with E. Howard Bennet, of the American Wool and Cotton Reports, of Boston, and Henry McCusker, general manager of the East Braintree Bleachery and Dye Works, of East Braintree, Mass. The party came here from Spartanburg county, where the Chesnee Mills and the new plant of the Pacific Mills at Lyman, were visited. They inspected various mills in Virginia and North Carolina.

"I have been in the mill business for 60 years," said Mr. Estes and my first trip into the Southern textile territory has opened by eyes to things which I never dreamed were true.

"For decades everybody thought that mills in New England were the final word in textiles and that the best goods were turned out there. We do make good fabrics and will do so for years to come but the time is now past when New England can claim undisputed supremacy in textiles. Such mills as Riverside and Dan River, Proximity, Chesnee and other in the South are turning out goods second to none."

Mr. Estes told also of the fine high calibre men he had met in the management and ownership of the Southern mill. "With such fellows as we have seen during the past few days it is no wonder that mills in Dixie are making a name for themselves in the world of textiles."

Given fair treatment by law makers, and with a good supply of honest intelligent, capable management and operation there is no pro-

phesying what progress will be achieved by the Southern Textile industry, the visitors said.

### Georgia Manufacturers To Meet June 22

The Cotton Manufacturers Association of Georgia will meet in Atlanta on June 22. The annual meeting this year has been set following the date of the meeting of the American Cotton Manufacturers Association in order that some of the questions brought up there may be localized and discussed from the standpoint of Georgia mills. A tentative program is now being arranged.

### Winnsboro Mills

Officials of Lockwood, Greene & Co., says, in connection with the announcement some time ago that their company had sold its interest in the Winnsboro Mills Winnsboro, S. C.:

"Since the incorporation, the common stock of the Winnsboro Mills has been held by the United States Rubber Co., and Lockwood, Greene & Co., stock from the beginning, exercised the option and purchased the Lockwood, Greene & Co., common stock.

The management continues as before, under Lockwood, Greene & Co. Henry C. Everett, Jr., has been and still is the treasurer. The treasurer's office will remain at Boston."

# RAYN REEDS

On account of the ever-increasing use of Rayon (artificial silk) by Southern cotton mills, we are making a reed particularly adapted to the Rayon yarns.

Special attention is necessary to the finish on the wire used in these reeds, which finish requires approximately three times the length of time usually given to regular reed wire.

There is, however, absolutely no extra charge for this special finish as we invoice Rayon reeds at our regular standard prices.

## STEEL HEDDLE MANUFACTURING CO.

### MAIN PLANT

21st and Allegheny Ave., Philadelphia, Pa.

### SOUTHERN PLANT

Steel Heddle Bldg., 621-635 E. Mcbee Ave., Greenville, S. C. Hampton Smith, Manager.

### New England Office:

44 Franklin St., Providence, R. I.

### Foreign Offices:

Huddersfield, England—Shanghai, China.

### THE STEEL HEDDLE LINE

"Duplex" Loom Harness (complete with Frames and Heddles fully assembled).  
Drop Wires (with Nickel Plated, Copper Plated or Plain Finished).

Heddles—Harness Frames—Selvage Harness—Leno Doups—Jacquard Heddles—Lingoes—Improved Loom Reeds—Leno Reeds—Lease Reeds—Beamer Hecks—Combs.



## Letters to the Editor

The following letters were received with pleasure and appreciation:

Spartanburg, S. C.  
March 11, 1926.

Mr. David Clark,  
Charlotte, N. C.

Dear Mr. Clark:—

I have received copy of the Fifteenth Anniversary Number of your Southern Textile Bulletin, and wish to congratulate you. I believe the Southern Mills as a unit, and the operatives, in these mills thoroughly appreciate your keen interest in the welfare. I know of no agency that has done more to foster good will between owner and operative than has your publication.

I wish for you many more years of useful service, and with personal regards, I am

Yours very truly,

E. S. TENNENT,  
Purchasing Agent.

Lockwood, Greene & Co., Inc.  
Charlotte, N. C.

Southern Textile Bulletin,  
Charlotte, N. C.

Gentlemen:

I congratulate you upon the splendid response we have received in answer to a want ad which was published in your paper.

Very truly yours,  
J. N. PEASE.

Brookside Mills.

Knoxville, Tenn.,  
March 20, 1926.

The Southern Textile Bulletin,  
Charlotte, N. C.

Gentlemen:

I congratulate the Southern Textile Bulletin on reaching its fifteenth anniversary and hope that the fifteen years represented have been as profitable to the paper as its work under the able management of David Clark has been helpful and beneficial to the entire textile industry in the territory where the paper circulates.

Mr. Clark, while he has been aggressive in the expression of a policy which he believed would benefit the textile managers, has never been unduly hostile to the interest of mill operatives but has advocated what he thought would be for their best in the conduct of daily affairs incident to industrial life.

Again congratulating all concerned, I am,

Very truly yours,

JAMES MAYNARD,  
President Boorkside Mills.

David Clark,  
Charlotte, N. C.

Dear Sir:

The writer has for many years read with interest your periodical and feels that it is a great contribution to the upbuilding of the textile industry. It has, in the writer's opinion, always rendered satisfac-

tory service in the cause which it has endeavored to promote. The writer has further observed David Clark's efforts in having the Child Labor Laws declared unconstitutional and his campaign against the ratification of the Federal Child Labor Amendment to the Constitution. I feel that the industry is greatly indebted to Mr. Clark for his personal and efficient efforts put forth to this end. I wish to take this opportunity to congratulate your paper on the constructive service which it has, and is still, rendering to the industry.

Yours very truly,

S. W. MIMMS,  
Mgr. Pacific Mills (Hampton Dept.),  
Columbia, S. C.

Textile Hall Corporation  
Greenville, S. C.  
March 17, 1926.

David Clark, Managing Editor  
Southern Textile Bulletin,  
Charlotte, North Carolina.

Dear Mr. Clark:

I have read with great interest your recent Anniversary Number of the Southern Textile Bulletin. Please permit me to say that you are accomplishing, with great credit to yourself and your associates, a work most useful to the textile industry. More than this, it has been of great value to the entire commercial life of the South.

During recent years I have noted frequently through the public press evidence of your activity in many lines for the public good. You have taken the burden of leadership at times when the work should have been assumed and carried on by others. Had you not done so it is probable that serious consequences would have ensued.

Most people are satisfied to tread the beaten path and to let others undertake the pioneering and strenuous tasks. What a nation of automata we would be if everyone adopted this passive, come easy, go easy attitude.

The prosperity and progress of the South is not due to the steady "goose-stepping" of the conservatives, but to men like you who have the brains to think, the vision to see, the courage to venture and the will to do.

I prefer to say these things about you while you are living rather than to reserve them for a letter of condolence, should I be fortunate enough to survive.

Assuring you of my high esteem, I am

Yours sincerely,

W. G. SIRRINE.

Fibre and Fabric  
Cambridge, Mass.,  
March 17, 1926.

Mr. David Clark, Editor,  
Southern Textile Bulletin,  
Charlotte, N. C.

My dear Mr. Clark:

Your Fifteenth Anniversary Number is of a great deal of interest and pleasure to me. It reminded me of

old times when I was traveling through your country. I want to congratulate you on the splendid success you have attained. You deserve it all I am quite sure.

With kindest regards, I am,  
Sincerely,

J. N. Paradis.

Anniston, Ala.  
March 27th, 1926.

Mr. David Clark,  
Charlotte, N. C.

Dear David:

I wish to commend your statement regarding the normal relationship in the late issue and suggest that you take the lead in having the American and National Associations protest. It is time for the deplorable conditions in this industry to receive a little publicity. In the midst of plenty the textile industry is practically on a famine basis. I want to say also that we notice a good deal of curtailment in the carded yarn division and a very widespread determination on the part of spinners to avoid accumulation of stocks. That is our only hope as I see it and it is a great pity that North Carolina mills cannot or will not heed the lessons of the past. The time to howl is right now before they find themselves crushed under a load they cannot lift for years no matter how good general conditions may be.

With kindest regards, I am,  
Yours sincerely,

T. SCOTT ROBERTS

### Growth and Uses of Rayon Is Discussed

Rayon is answering the demand made by the women, who are buyers of the nation, for a cloth with more sparkle and more sheen, declared James W. Cox, Jr., a textile engineer of New York city, speaking before the members of the American Society of Mechanical Engineers in Philadelphia.

Mr. Cox briefly sketched the growth of the industry and explained the difference between denier, or long fiber thrown rayon, and spun rayon, or the short fiber product.

In discussing and usage of the spun rayon product, Mr. Cox explained that Philadelphia was the first city to use the new product in this country and that at present approximately 85 per cent of spun rayon used in this country is produced in or close to Philadelphia.

He characterized the discovery and subsequent use of rayon as "the most revolutionary step taken in the textile industry for the past 300 years," and predicted that while the product has by no means been perfected, it will grow to be, when perfected, one of the greatest benefits to mankind in general that has been produced for many years.

Mr. Cox developed his discussion around the production of spun rayon and its usage, leaving the denier or long fiber product almost entirely alone, explaining that this product has become so well known that little discussion is necessary. During the year 1925 there was used in the United States 55,000,000 more of denier rayon than of real silk, accord-

ing to the speaker, and the year 1926 will see in the United States, Mr. Cox explained, was in the manufacture of Bolivia cloth, which reached the heights of popularity a few years ago. Since that time it has been steadily growing in usage, he concluded.

### Philippines Largest Buyer of American Cotton Piece Goods

The Philippine Islands today constitute our largest single market for cotton goods, according to a trade bulletin issued by the Commerce Department. With the exception of 1923 and 1924 when they were supplanted by Cuba they have held this position since pre-war days. In 1925 we sold the Philippines 80,000,000 square yards of cotton piece goods valued at approximately 12 million dollars. This sum represents almost 15 per cent of this country's entire export business in piece goods for that year.

The most important phase of the textile industry in the Philippines of recent years is the radically changed methods of selling. In the old pre-war era goods were shipped year in and year out to a relatively few well-established firms, payment being made in advance or on mutually satisfactory terms. The importers kept these goods in stock and sold them as rapidly as they could be absorbed by the market.

The vastly increased competition following the war resulted in an extremely aggressive type of salesmanship. Nowadays, the vast majority of cotton goods sales are made on an "indent" basis. The American or European firm which formerly bought goods and sold them to these Chinese dealers now sell to these same dealers but on a commission basis. This situation was made necessary because of the entrance into the market of new operators who specialized almost exclusively in this commission type of business. Under the new system the credit risk is of course spread out and naturally increased. While the banks finance a certain amount of this indent trade, all sorts of credit complications are possible and in certain instances American exporters have had to take losses which they were seldom liable to under the old system.

"The Philippine Cotton Goods and Hosiery Markets" is issued as Trade Information Bulletin No. 392. It is a thorough analysis of the market, particularly in connection with the changed methods of doing business. It may be obtained for ten cents from the Superintendent of Documents, Government Printing Office, Washington, D. C., or any of the district offices of the Bureau of Foreign and Domestic Commerce.

### Cotton Statistics

Stocks of American cotton exclusively of linters in all hands in the world were approximately 12,437,000 bales on January 31 this year, against 10,391,000 last year, according to the Cotton Information Service of the Merchants National Bank of Boston. Stocks at the mills were 2,827,000 against 2,375,000.



while stocks outside the mills were 9,310,000 against 8,016,000.

Practically all of the difference of 1,746,000 bales between stocks last year and this year is accounted for by increases in stocks on farms and in public storage and at mills in this country. Stocks on farms and in public storage were 7,133,000 bales this year against 5,661,000 last year, while stocks at domestic mills were 1,741,000 against 1,371,000.

Stocks abroad were smaller in the aggregate on January 31 this year than last year, says the Merchants Bank. Stocks afloat to and at foreign ports were only 2,477,000 against 2,355,000, while stocks at foreign mill were 1,086,000 against 1,004,000. Foreign manufacturers evidently have not added to their stocks as domestic manufacturers have.

These figures confirm the impression that the 1926 crop has not been distributed to date in as large measure as was anticipated early in the season. The heavy movement to the mills during the first few months. The result is seen in the large accumulation of cotton on farms and in public storage in this country.

### No "Laddering" Hosiery

The details of a new branch textile industry—the making of ladderless stockings for women—which were explained at a meeting in London a day or two ago, have aroused considerable interest in the districts of Leicester and Nottingham. For some years past manufacturers have been able to reduce the laddering tendency in knitted hosiery, but it is claimed that a machine has now been invented which will eliminate it altogether. The fabric produced on this machine, it is said, has a knotted stitch, resulting in every stitch in the material being self-contained, and in addition the fabric can be cut without fraying of the edges, and in consequence lends itself to all kinds of embroidery. The fabric, which may be made from silk, artificial silk, cotton, or other material, has an open texture, which demands appreciably less raw material and possesses great elasticity.

Maurice Foister (M. C. Foister & Co.), Leicester, Eng., has secured the patent, and is to be the managing director of a company which is to be formed for the manufacture of the new fabric, which at present is called "lyonesse," the inventor of the machine being M. Serra, of Lyons. Work is to be put in hand as soon as possible, and the public may expect to find the fabric on the market towards the end of spring. Some forty looms are to be erected in Leicester and Nottingham for its manufacture.

The machine is of a simple type, and it will be an easy matter to instruct operators in its use. Though the immediate use for the fabric is women's stockings, the material produced can be utilized for many other garments as well.

Some manufacturers who have inspected samples of the stockings say they are ladder-proof, and that the invention will be very beneficial to the artificial silk trade, as the great drawback to the stockings

produced today is that "ladders" soon appear. Others, however, while agreeing that the fabric, according to samples, is excellent, fear that the cost of production may be too high. Still the makers themselves maintain that they can produce the material at a cost not higher than that of other knitted fabrics, and they regard the prospects of the industry as being distinctly good.—Manchester (Eng.) Guardian.

### Garza Mechanical Mill

Consolidated Selling Co. has recently added a miniature working model of the Postex Cotton Mills, Post, Tex., to its series of mechanical sales aids. These displays are placed at the disposal of retail stores and the Postex model has already been shown at Gimbel Brothers and Bloomingdale's, of New York city. It is now on its way for carding machine, following which comes another sample of cotton, illustrating the progressive refining method used in the preparation of raw cotton.

Seven additional series show, in proper sequence, the processes of roving, spinning, warping, weaving inspection, bleaching, the making of sheets and pillowcases and the packing of the merchandise, ready for shipment.

As the last transparency is illuminated, a freight car on which is distinctly printed "Carload of Garza Sheets and Pillowcases for (name of store)" comes into view.

The review consumes about three minutes. The display measures 7 feet 3 inches in length, 2 feet 8 inches wide and 2 feet 6 inches high, or 4 feet 9 inches high with background in place for display.

From one side of the exhibit emerges an automobile truck loaded with raw cotton, which enters the mill. The side of the main building is complete with windows, nine of which have been replaced by transparencies. Additional windows are in the elevated skylight, where a well-written description of the respective processes is shown.

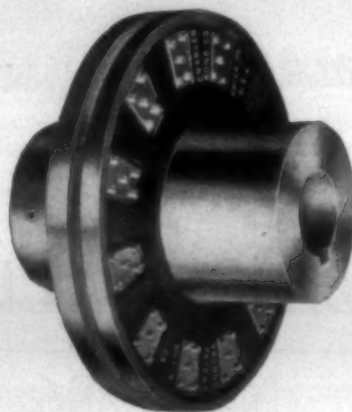
As the motor truck comes into view, the upper part of the mill is lighted and immediately the transparency below shows the picking machine, the first process in the making of cotton cloth. A section of the wall then gradually lowers and reveals a sample of cotton as it comes from the picking machine. In a second or two, the wall closes and the second transparency shows the an extensive tour throughout the State of Texas.

Garza sheets and pillowcases are made at Postex and the display pictures step by step the manufacture of these goods.

### Increase in Canadian Imports of American Hosiery.

The Canadian importation of cotton socks and stockings increased from 287,000 dozen pairs valued at \$682,500, or 85 per cent of the total hosiery imports in 1924, to 460,000 worth \$747,000, or 89½ per cent of the total imports in 1925. The increase in imports of men's hosiery was most pronounced, due chiefly to quality, prices, excellent service, and variety.

## For Direct Connecting Motors to Spinning and Twisting Frames



### Over 100,000 In Use

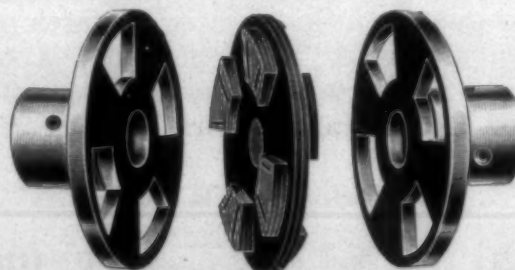
Grundy Couplings are designed to render the utmost in service on all direct drives. They are made according to specifications determined by an analysis of the textile industry. They are made in a variety of sizes, working on any direct drive—with fewer repairs and less attention than any other coupling on the market. Thousands of these couplings are at present in use in various Textile Mills throughout the country. Illustrated folder showing the "Grundy" actually driving Spinning and Twisting Frames will be forwarded upon request.

The following salient features should soon prove to you why

## Grundy Patent Flexible Insulated Coupling

### Should Harness Your Direct Drives

1. Takes care of uneven strains.
2. Self-adjustment insures perfect alignment of shafts.
3. Can be used whether insulation is required or not.
4. Perfectly balanced, and adapted for revolving at high speeds.
5. Runs in either direction; is close connected; easy of access; practically no repairs.
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7. Maintains a positive and silent drive; free from objectionable hammer action features.



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No. 1286

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**Q**UANTITY and quantity production by the weave room can only be obtained when the preceding processes have been carefully and correctly performed. Weave room production is largely dependent upon good sizing. It is highly important then that sizing should be carried out with the use of the best materials obtainable.

Sizing Tallow No. 1286 measures up in every respect to the high standards demanded of such a product by exacting mill men.

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## Cotton Mill Processes and Calculations

By D. A. Tompkins.

Copy Revised for Third Edition.

(Continued From Last Week)

In front of each shearer is a lifting bar, operated by a handle at side of machine. When a seam in the cloth comes to the shearer, this handle is pulled and the lifting bar raises the cloth from all the shearers, and thus prevents the seams being caught between the blades. Any carelessness on the part of the operative in this respect will cause the seams to

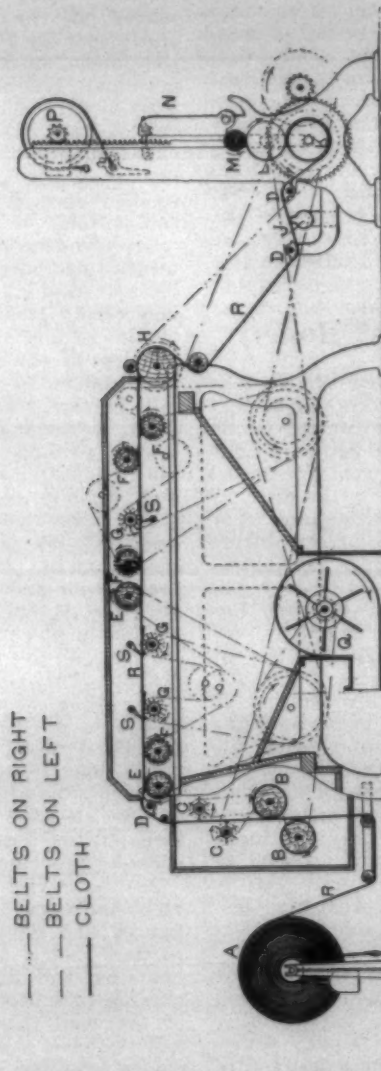


Fig. 54. Brusher with Calender.

catch and wind up and cut to pieces a lot of cloth before machine can be stopped.

The bristle brushes, one on top and the other on bottom, are wooden cylinders filled with stiff bristles for giving a final brushing to the cloth.

The cloth next passes over the measuring roll under another spreader and over the vapor cylinder and over another spreader to calender rolls, where it is wound up into a large smooth hard roll of cloth.

325. Vapor cylinder is a horizontal brass tube with a number of fine perforations in the top. A small amount of steam is admitted in the tube, and sprayed out through the perforations on the cloth. The steam valve is connected with the belt shipper, so that when machine is stopped, steam is shut off; and when started, steam is turned on again.



326. Calender rolls are heavy cast iron rolls, ground very smooth on the surface. They are hollow for the admission of steam to heat them. They are driven by gear at one end, and are arranged so that either the surface speed of one roll is the same as the other; or so that one is running faster than the other. In either case there is an ironing effect on the cloth; but when one roll is faster than the other, there is a slipping on the cloth which gives it a smoother finish. But this process also stretches the cloth, and would in some cases be objectionable.

327. Cloth roll is of wood, and has iron gudgeons in the end which run in the half boxes formed in the lower ends of pressure bars.

Pressure bars slide up and down in the upright frame. They are controlled by the pinions working in the racks shown. The pinions are on a shaft carrying a brake wheel at one end. Brake is adjusted so that the down pressure on cloth roll may be adjusted to make a roll of any desired hardness.

328. When cloth roll has become as large as desired, the latch-bar N is turned down on its pivot, the pressure bars are run up out of the way, and cloth roll rolled out on top of latch bar and removed.

329. An exhaust fan, working in the lower part of the machine, draws out the dust and lint made by the various operations, and blows it out through a pipe which may lead into the dust room.

The various rolls are driven by endless belts from main driving shaft, passing under and over the pulleys on ends of rolls. These are generally 2-inch belts. Some are on each side of machine.

It will be noticed that some of the rolls run with the cloth and some against the cloth. It is necessary in starting a new machine to get full instruction from the manufacturer as to which direction the various rolls run. In the machine illustrated by Fig. 54 arrows show these directions. The theory of this arrangement is that the brushes immediately in front of the shear blades shall run with the cloth and with a greater surface speed than cloth in order to lay the fibres forward so that shearer may catch them.

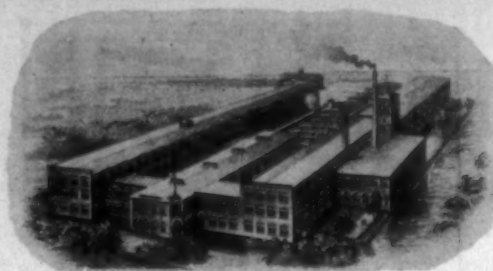
The brushes immediately behind the shearers run in the opposite direction from the cloth in order to brush loose any fibres that shearers may have cut.

330. The calender rolls are driven by a belt from a counter-shaft on the main machine. A pulley on calender roll drives the measuring roll. The pulley on measuring roll is adjustable in size, so that speed of cloth delivered may be adjusted to suit the speed of calenders. The measuring roll is generally run a little slower than calender, to ensure a tight smooth winding.

331. Sometimes a considerable draft is introduced between measuring roll and calender, thus stretching the goods as much as 8 to 10 per cent. But this much is injurious to the goods, and is of no advantage, as goods are now all sold on the basis of weight. A draft of 2 to 3 per cent. is about right. If goods are to go direct into consumption, without further manipulation, the question of stretch, within moderate limits is immaterial. But if goods are to be sold to a bleachery, the trade imposes certain limits on stretch. A common requirement is that goods shall stand without damage a stretch of 4 per cent. at bleachery. This would not permit of much stretch in the mill, and would entirely prohibit the use of differential speeds of calender rolls.

332. If for any reason it is desirable, the calender rolls may be run cold, and the vapor cylinders also dispensed with.

(Continued on Page 25)



## GREIST LOOM DROP WIRES

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# SOUTHERN TEXTILE BULLETIN

Member of Audit Bureau of Circulations  
Member of Associated Business Papers, Inc.

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DAVID CLARK  
D. H. HILL, JR.  
JUNIOUS M. SMITH

Managing Editor  
Associate Editor  
Business Manager

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## ADVERTISING

Advertising rates furnished upon application.  
Address all communications and make all drafts, checks and money orders payable to Clark Publishing Company, Charlotte, N. C.

## Southern Yarn Spinners Meet

WE attended the annual meeting of the Southern Yarn Spinners' Association at Charlotte this week and listened, with much interest, to the discussions.

After almost every man present had testified that the yarns he was making were selling below cost of production, we asked for a show of hands by those who were curtailing and it was found that in spite of the calamity talk, there was not a single man present who had begun to curtail the operations of his mills.

The fine yarn mills, although prices are not yet on as low a basis as coarse carded yarns, have already begun a systematic curtailment, but the men who attended the meeting and told the truth when they said that yarns were at or below cost, had not seen fit to curtail.

In fairness to them, however, it must be stated that the meeting disclosed the fact that the carded yarn mills were much better supplied with orders that was generally supposed and with very few exceptions there has been no accumulation of yarns.

The situation on carded yarns is by no means hopeless and their position is far stronger than at this time last year when the mills held enormous accumulations.

One yarn spinner who had over 2,000,000 pounds of stock yarn on April 1, 1925, is now sold ahead for thirty days and has no accumulations except odd lots.

Buyers of yarns have been persistently withholding orders under the belief that there would be a decline in cotton.

Should there be a rainy season or any other serious setback to the

cotton crop, yarn buyers will quickly enter the market, and unless yarns are accumulated, higher prices will result.

The Southern Yarn Spinners' Association has done good work during the past year and should have much better support than it has received.

We believe that they acted wisely in making a division between the soft yarn spinners and the hard yarn spinners, and putting vice-presidents in active charge of each section.

## An Interesting Book on Cotton

WE are indebted to I. B. Covington, manager of the Wade Manufacturing Company, Wadesboro, N. C., for an exceedingly interesting little book named "Cotton."

It is a very old book and although it deals with the early history of cotton and cotton manufacturing, it was published in London, England, by the Society for Promoting Christian Knowledge.

A recent report from England said:

"A cloth, lighter than thistledown and softer than the finest crepe de chine, has been created in London."

Many no doubt marveled at modern skill and yet the little book in discussing the early manufacture of cotton in India, all of which was spun and woven by hand says:

"In Bengal delicate fabrics are woven. So fine are they in quality that when they are spread upon the grass, and the dew has fallen, they are no longer to be seen. A breath will blow away a lady's dress."

It would appear from this that the manufacture of cloth "lighter than the thistledown" is nothing new.

Among the interesting items in the book is the following description of an early woman of India spinning cotton:

"First, she cards her cotton with the jawbone of a fish; then she separates the seeds by means of a small iron roller, which she works backwards and forwards over a flat board; next, with another bone, she brings the fleecy mass to a uniform substance, after which she draws it into thread, choosing the moist atmosphere of a tropical morning or evening to work in. If she is compelled to spin in the dry season, or during the heat of the day, she places a vessel of water under her cotton, that evaporation may supply the requisite moisture. Her spindle is made of iron, weighted with a ball of clay, and it moves upon a piece of smooth hard shell, imbedded in another lump of clay."

It appears from this that the women of India knew more about the necessity for humidity than some of our present day cotton manufacturers.

The little book "Cotton" is so very interesting that we are going to reprint it in the Southern Textile Bulletin, beginning at an early date.

## Side Lights

IN the midst of the pessimism so prevalent at the present time we note items that seems to indicate that things are not quite as bad as they appear.

A report from the Department of Commerce at Washington says:

"Takings of American cotton by British spinners during the four weeks ended February 26 amounted to 186,000, an increase of about 2,000 bales over takings for the preceding four-week period.

A report from Biddeford, Maine says:

"The Pepperell Manufacturing Company now has 700 looms in operation at night. The company has received orders since the first of the year for about 1,850 bales of drills for India, larger than any recent year's shipments and close to the combined total for all of 1923 and 1924."

These items seem to indicate that somebody is getting business.

## Idle Spindles

THE idea seems to prevail that all the cotton spindles in the United States are now in operation, but the recent report of the Department of Commerce shows that during February, 1926, there were 4,848,000 spindles that did not operate.

Of the idle spindles, 559,000 were in the South, 3,935,000 in New England and 355,000 in other States.

The idle spindles in the leading cotton manufacturing States were:

South—	
Alabama	32,000
Georgia	107,000
North Carolina	247,000
South Carolina	42,000
North—	
Connecticut	95,000
Maine	82,000
Massachusetts	2,936,000
New Hampshire	328,000
Rhode Island	356,000

The fact that Massachusetts still has almost 3,000,000 spindles, or half the number in North Carolina, still idle tell a serious story.

## Another Child Labor Bill

CONGRESSMAN HUDDLESTON, of Alabama, has introduced House Bill 9313 requiring all goods made "in whole or in part" by persons under 16 years of age to be prohibited from interstate commerce unless marked "Made by Child Labor."

There is no probability of the bill being passed and if enacted it would be thrown out by the United States Supreme Court, but it shows the efforts that are still being made to secure Federal control.

In this connection it is interesting to note that the Federal Child Labor Amendment was recently unanimously rejected by the Kentucky Legislature.

As all the Kentucky Congressmen and both Kentucky Senators voted for the measure when before Congress, there seems to be evidence that members of Congress mistake the voice of old maid lobbyists for the voice of their constituents.

## Carders Meet at Spartanburg

THE meeting of the Carders' Division of the Southern Textile Association at Spartanburg on Friday of this week promises to be of unusual interest.

The questionnaire prepared by chairman J. O. Corn, covers a number of interesting and important problems and an interesting and helpful discussion is anticipated.

## Investigating The Women

Judging by the recent agitation that has centered about the State Capital one might be tempted to think that "Investigating" may become as popular in Raleigh as it has been in Washington. This time they want the women investigated—and it appears to be women mostly who are asking for the investigation. It is a little hard to figure just what good could be accomplished by such a survey as has been demanded by some of the leaders of two or three women's organizations. The field forces of the State Board of Public Welfare it may be safely assumed, could give a rather intelligent report on conditions under which the women in industry in North Carolina are working. The State Board of Health, it might be assumed, it conversant with health conditions throughout the State. And Commissioner of Labor and Printing Grist would be able to supply considerable data regarding women in industry in North Carolina. There is probably little data available regarding that very largest class of employed women, domestic servants, but probably no group or agency is more competent to make a survey of women in this particular field than the members of the women's organizations who are suggesting the more comprehensive survey. Between the agencies named one should be able to secure almost any sort of information that might be desired.—Charlotte Observer.



## Personal News

C. E. Folk has become designer at the Art Cloth Mills, Lowell, N. C.

W. B. Holt has been appointed overseer weaving at Lowe Manufacturing Company, Huntsville, Ala.

H. G. Leigh has resigned as superintendent of the County Moore Mills, Hemp, N. C.

D. P. Damon has been appointed night overseer spinning at the Thomaston (Ga.) Cotton Mills.

N. C. Hill has been appointed overseer spinning at the Stonewall (Miss.) Mills.

P. B. Mullin has been appointed overseer weaving at the Stonewall (Miss.) Mills.

Fred L. Mason has become overseer spinning at Willingham Mills, Macon, Ga.

Will Prince has become overseer of weaving at the Tucapau Mills, Tucapau, S. C.

—, —, Moore, of Kannapolis, N. C., has accepted the position of overseer of carding at the Cascade Mills, Mooresville, N. C.

W. L. Moffet has been promoted to second hand on the day run to night overseer at the Trion Company, Trion, Ga.

Walter Petty has become overseer spinning at the Borden Manufacturing Company, Kingsport, Tenn.

—, —, Parker of Kannapolis, N. C., has accepted the position of superintendent of the Vann Moore Mills, Franklinton, N. C.

A. O. Ferrell has resigned as assistant superintendent and overseer of weaving at Savona Mills, Charlotte, N. C.

R. R. Turner has resigned as overseer of spinning at the Savona Manufacturing Company, Charlotte, N. C.

J. W. Engle has been promoted from overseer of carding, spinning and silk room to superintendent of the Elmira Cotton Mills, Burlington, N. C.

William J. Bailey has been elected president and treasurer of the Clinton Cotton Mills, Clinton, S. C., succeeding his father, the late M. S. Bailey.

J. O. Epps has resigned as overseer of carding and spinning at the Johnston Manufacturing Company, North Charlotte, to accept a position at the Carolina Textile Corporation, Dillon, S. C.

W. G. Hines has resigned as overseer carding and spinning at the Oakboro Cotton Mills, Oakboro, N. C., to become overseer carding at the Norwood Manufacturing Company, Norwood, N. C.

Homer L. Pruitt is now overseer weaving at the Lanett (Ala.) Mills.

W. H. Seay has resigned his position with the Saxon Mills, Spartanburg, S. C., to accept a position in Kannapolis, N. C.

J. R. Haney, overseer of carding at the Savona Manufacturing Company, Charlotte, N. C., has also been given charge of the spinning.

J. J. Hyder has resigned as overseer weaving at the Lanett (Ala.) Mills.

A. B. McCormick has resigned as superintendent of the Cascade Mills, Mooresville, N. C., to accept a similar position at the County Moore Mills, Hemp, N. C.

W. A. Hunt has resigned as overseer of carding at the Arnall Mills, Sargent, Ga., and accepted a similar position at the Wadsworth Cotton Mills, Spartanburg, S. C.

E. P. Floyd has resigned as overseer of weaving at the Tucapau Mills, Tucapau, S. C., to accept a similar position at the Mooresville Cotton Mills, Mooresville, N. C.

B. L. Solesbee has resigned as overseer of carding and spinning at the Martel Mills, Egan, Ga., to become overseer carding, spinning and the silk room at the Elmira Mills, Burlington, N. C.

L. A. Ellenburg who has been superintendent of spinning at Brookside Mills, Knoxville Tenn., for the past fourteen years has been in the hospital where he underwent a very serious operation. He has therefore, resigned his position in order to rest up for a few months to regain his health.

### William H. Williamson

William H. Williamson, of Charlotte, for years one of the most prominent cotton manufacturers in North Carolina, but who retired from active business some years ago, died at his winter home in DeLand, Fla., on Tuesday. Funeral services were held Tuesday in Raleigh, his former home.

Mr. Williamson was a son of the late J. N. Williamson, of Graham, and for many years was engaged with his father in the operation of the Ossipee Mills, Burlington. He afterward organized the Pilot Cotton Mills, in Raleigh, of which he was president until it was sold to the Consolidated Textile Corp. Mr. Williamson then retired and for the past several years had been living in Charlotte. He was an unusually public spirited man and had at different times made large contributions to charitable causes.

Mr. Williamson is survived by his mother, one son and one daughter and a brother, J. N. Williamson, of Burlington.

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A DISTINCTIVELY SULPHONATED C. P. CASTOR OIL  
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A PROCESS EVOLVED BY THE SONNEBORN TEXTILE LABORATORIES

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Being *acid proof* and *lime proof*, it resists *extremely hard water*, acids (also inorganic) and high temperature dye liquors. It will not separate out of solution and form *insoluble scums* in the dye kettle.

*Glauder's salts*, added to the dye bath, even in large amounts, will not "break the oil." This is extremely important in certain processes of dyeing.

Two added features of AMALIE SULPHO TEXTOL OIL are its *freedom* from stickiness and its *dependability* to leave *no objectionable odors* on the goods due to rancidity. These are common complaints with the usual sulphonated castor oils, turkey red oils, etc.

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**Its Cost is Less**

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*Manufacturing Chemists to the  
Textile Industry*

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**New York**

**L. SONNEBORN SONS, INC., NEW YORK, N.Y.**



# MILL NEWS ITEMS OF INTEREST

**Lexington, N. C.**—The Nokomis Cotton Mill has placed contract for humidifiers with the Bahnson Company, Winston-Salem, N. C.

**York, S. C.**—The Cannon Manufacturing Company has placed contract with the Bahnson Company, Winston-Salem, N. C., for humidifier equipment.

**Macon, Ga.**—The Bibb Manufacturing Company has let contract to T. C. Thompson & Bros., Charlotte, for erection of shipping building. Three stories mill construction, 60x110 feet, cost \$40,000.

**Laurens, S. C.**—The Laurens Cotton Mill has placed a contract with the Bahnson Company at Winston-Salem, N. C., for humidifying equipment which will be installed in the near future.

**Concord, N. C.**—The Cannon Manufacturing Company has placed contract with the Bahnson Company, Winston-Salem, N. C., for humidifier equipment.

**Winston-Salem, N. C.**—Indera Mills have placed contract with the Bahnson Company of this city for humidifier equipment which will be installed at once.

**Malvern, Ark.**—It is reported that the local Chamber of Commerce is endeavoring to raise a fund with to secure the location in Malvern of a Worcester, Mass., cotton mill, which is seeking a suitable Southern site. According to the report, the Arkansas Light & Power Co., has subscribed \$100,000.

**Turnersburg, N. C.**—The Turnersburg Manufacturing Company has been incorporated with a capital stock of \$100,000 by P. C. Journey, of this place and Clarence Stimpson, of Statesville and N. F. S. Steele, of Stony Point. The new company takes over the Laura Ellen Watts Cotton Mills, which were recently sold by the trustee. The plant has 1,600 spindles.

**Charlotte, N. C.**—Sale of the four cotton mills of the Mecklenburg Mills Company, which was scheduled for Saturday was not made, but postponed until April 1. The sale was order by Judge E. Yates Webb, of Shelby, judge of the United States court, Western North Carolina district, to be held at Newton, and no change has been made in place of sale.

Sidney S. Alderman, of Greensboro, will make the sale, as special master appointed by the court. The sale will be a auction, to satisfy holders of bonds of the company. The four mills are the Mecklenburg, at Charlotte; Clyde and Newton, at Newton, and Nancy, at Tuckertown, Montgomery county. They have been idle since the concern was adjudged bankrupt on October 17, 1923.

**Lincolnton, N. C.**—Boger and Crawford Spinning Company has let contract to the Southern Engineering Company, Charlotte, for structural steel for the addition to be built to the mill here. The addition will be 106x442 feet as recently noted.

**Columbus, N. C.**—Production of 4s to 10s single and ply yarns has already been begun by the Columbus Cotton Mills, Inc., the new cotton mill here. The Southern Yarn Co., of Chattanooga, Tenn., and Tryon, N. C., is the sole selling agent for the mill.

**Greensboro, N. C.**—The first unit of the 16 Allen Worcester kiers to be installed at the Revolution Cotton Mill is being put in by the William Allen Sons Co., of Worcester, Mass.

**Houston, Texas.**—The contract for the construction of an addition to the Houston Textile Mill was let through the office of J. E. Sirrine & Co. The Street Construction Co., of Houston, secured the contract, and work will begin in the near future. The amount of the job is approximately \$110,000. This addition to the present plant will house, about 5,000 spindles.

**Clinton, S. C.**—At a meeting of the directors of the Clinton Cotton Mills, officers were elected as follows: William J. Bailey, president and treasurer; Joseph A. Bailey, vice-president and W. C. Oxley, secretary.

William J. Bailey, is becoming president, succeeds his father the late M. S. Bailey. He has been treasurer of the company for some time.

**Cliffside, N. C.**—The Cliffside Mills expect to spend about \$630,000 for improvements and enlargements to the mills here. Machinery costing \$300,000 has already been purchased and will be installed soon to convert two thirds of the production of the mill to terry towels, as recently noted. Plans have been prepared for a bleachery to be 60x200 feet, two stories high. A towel production of 40,000 daily will be possible when the improvements are completed.

The mills recently completed the construction of a finishing building 50x345 feet and a considerable amount of new finishing equipment is to be installed. J. E. Sirrine & Co., Greenville, are the engineers.

**Atlanta, Ga.**—As a result of the acquisition by the Georgia Holding Company of the 3,100 shares of Exposition Cotton Mills stock from the Consolidated Textile Corp., of New York, it now is announced by George S. Harris, president of the Exposition Cotton Mills, that the Georgia Holding Company now controls all of the 7,000 shares of stock outstanding, with the exception of a few scattered shares held in this section.

Mr. Harris would not state the amount paid for the stock. Atlanta men are leaders in the Georgia Holding Company. Among the Atlanta stockholders are Edward C. Peters, Henry Durand, James S. Floyd, Morris Brandon, and James L. Dickey.

In 1919 the Consolidated Textile Corp., sought to obtain control of the Exposition Mills, and it is understood that the Exposition stock was bid as high as \$50 and \$700 during the movement of the former company to obtain control, but the

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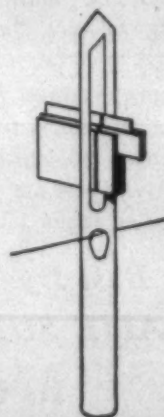
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Atlanta interest maintained control, pooling their holdings.

Since 1919, the mill has expanded considerably, developing into a specialty mill during the last five years, according to President Harris, who became president of the mill in 1920. The Exposition Mills have 60,000 spindles and 1,600 looms, their production being specialties for converting and the manufacturing trade.

Mr. Harris stated that negotiations for the purchase of the Consolidated Textile Corporation's stock holdings were completed at a recent meeting held in New York. Mr. Harris stated the mill is running full time.

### C. F. Broughton Heads New Casa Blanca Corp.

C. F. Broughton was elected president of the American Casa Blanca Corp. at a meeting held in New York.

The organization was formed and the following made directors: Thomas M. Marchant, of Greenville; S. M. Beattie, Greenville; Ricardo Merit and Kenneth Everett, New York, and C. F. Broughton, of New Bedford.

Other officers elected by the directors are: Ricardo Merit, vice-president; Thomas Marchant, treasurer, and S. M. Beattie, secretary.

The American Casa Blanca Corp. is capitalized at \$700,000, and was organized to take over for this country the patent rights of the foreign company and to equip mills with the long draft spinning system. The equipment will be purchased mainly from the Eastern machinery builders.

It is stated that the company has already taken orders for equipment for approximately 200,000 spindles. Victor-Monaghan Co., the Piedmont Manufacturing Company and the Wamsuttat Mills have equipment for 5,000 spindles each, of which most is in operation.

### Nashville Hosiery Mills On Full Time

Nashville, Tenn.—Business at half a dozen or more hosiery mills, in Nashville is reported fairly active, with full time operations being made as a rule. However, it is a business of the hand-to-mouth sort. It is stated that buyers of hosiery are not making any contracts in anticipation of future requirements, but are sending in small orders from day to day to meet their current requirements.

Ordinarily, at this time of the

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year, jobbers are beginning to place orders on a brisk scale to meet fall demands. There is nothing of this kind of consequence going on now, it is stated. Occasionally there is an order for a few hundred dozen of staple varieties, but beyond this there is virtually nothing doing in the fall business. Needs for spring have not been anticipated, buying for requirements for day to day being the feature. The buying is in small quantities and frequently. The mill men only know when they open mail each day what volume of business is on hand, but orders are sufficient to keep operations brisk.

The downward trend of cotton has been the main factor in curtailing free booking of orders. With the market tending downward, buyers are constantly looking forward to lower prices on manufactured goods, and do not care to come into the market for any more than immediate needs.

Another difficulty that faces the hosiery manufacturers is the multiplicity of colors that is demanded this season.

### Texas Textile Association To Meet

The Spring Meeting of the Texas Textile Association will be held at Mexia, Texas, May 7th and 8th.

A very interesting program is now being prepared and will soon be announced. Officers of the association are: G. C. Dilling, president; D. H. Poole, secretary-treasurer; J. O. Wilson, first vice-president; H. G. Edmiston, second vice-president.

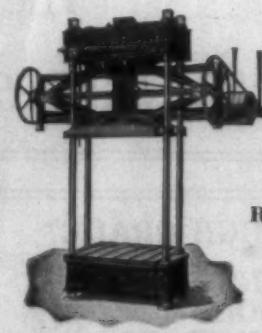
### Textile School Notes

The Textile School of the North Carolina State College will have an exhibit at the Eastern Carolina Exposition to be held at Greenville, N. C., April the fifth to ninth inclusive.

The exhibit consisting of students' work in textiles will embrace a wide variety of cotton and rayon fabrics and hosiery. This display will be similar to that which was on exhibition at the State Fair, Raleigh and was awarded the Blue Ribbon.

The space for this exhibit was donated to the Textile School by the Eastern Carolina Chamber of Commerce.

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### W. A. Wofford

W. A. Wofford, overseer of the cloth room at the Saxon Mills, Spartanburg, S. C., died at a hospital in that city. He was 57 years of age. He had been overseer of cloth room at Saxon Mills for some years and was highly regarded by his employers. Mr. Wofford was a Mason and was superintendent of the Sunday School at the Saxon Church. He is survived by his wife, three brothers and four sisters. One brother, Louis E. Wofford, is overseer of spinning at the Inman Mills and another brother, J. A. Wofford, is assistant superintendent of the Saxon Mills.

### Finds Europe Lags in Bleaching Methods

European plants are far behind their American neighbors in the bleaching and finishing of cotton goods, according to R. W. Arrington, superintendent of the Union Bleachery, of Greenville, S. C., who has returned from a trip of several weeks to England, France, Germany and Holland. Except for the fact that wages are much cheaper there than in this country, they could not manage to compete, he thinks.

"If we had the same clumsy methods of handling goods as the Europeans have, we would go broke in a short time," Mr. Arrington said. "They used the same methods handed down by their fathers and grandfathers with virtually no change.

Mr. Arrington went abroad to study conditions in bleaching and finishing plants there, but said he saw no ideas or methods which he expected to put into practice here.

### Textile Chemists and Colorists to Meet

The Southern Section of the American Association of Textile Chemists and Colorists will hold its spring meeting at the Hotel Patten, Chattanooga, Tenn., on Saturday evening, April 17, 1926.

L. L. Bamberger, superintendent of the Cedartown, Ga., branch of the United States Finishing Company, will discuss "The Dyeing and Finishing of Cotton Piece Goods," and plans to supplement his discussion with a three-reel motion picture illustrating his subject; owing to Mr. Bamberger's training and experience, it may be expected that his discussion will prove most interesting and informing.

J. D. Murray, resident manager of the Central Franklin Process Company, of Chattanooga, will discuss "The Relation of the Franklin Process to the Hosiery Industry;" owing to the extensive use of fancy dyed yarns by the hosiery mills for the production of multi-colored effects, Mr. Murray's discussion will be of the utmost importance to the hosiery manufacturers of the South. A general discussion of timely topics will follow the papers presented by Messrs. Bamberg and Murray.

### Frank Gurry With Scott, Charnley & Co.

Frank W. Gurry has resigned his position with the Stockton Commission Company to become manager of their textile Service Department. Mr. Gurry is a cotton manufacturer of long experience and is well qualified for his new duties.

### Growth of Federal Aid Alarms Senator

The system by which the Federal government extends financial aid to the States in the execution of various activities, provided the Federal funds are matched by at least an equal sum furnished by the States, is attacked by Senator James W. Wadsworth of New York, in Nation's Business for March.

The system was modest enough at its beginning in 1914 with an initial appropriation of \$480,000. Today, its inroads on the Federal Treasury have reached the enormous total of \$110,000,000 annually, which, of course, requires substantially an equal outlay from the States, so that the total cost of the system to the taxpaying public is well over \$200,000,000 a year. Its ramifications have taken many different directions, from road building to teaching mothers how to care for their infants.

"The time has come, in my opinion," said Senator Wadsworth, "to take stock, and to get a clear understanding as to where we are headed. I do not contend that the subsidy system is wrong in every detail, or that it ought to be abolished entirely. There may be some functions performed under it which can be done better by the Federal government than by the States. I do believe, however, that the subsidy system should be radically curbed, both in the interest of economy and sound policy, and that steps should be taken to check its growth before it undermines our whole system of dual sovereignty of the State and nation.

"I hear now of a movement to get

\$100,000,000 annually from the Federal government for the purpose of promoting education in the various States, on the "fifty-fifty" plan.

"The danger does not lie in the Federal Aid System alone by any means. During the last fifteen years the Federal government has undertaken the exercise of a large number of new and important functions. We have established the Federal Trade Commission, with inquisitorial powers over every business concern engaged in interstate commerce.

"We have set up a Tariff Commission charged with the duty of investigating the costs of manufacturing at home and abroad. We have created a Federal Farm Loan Board and given it authority to supervise the making of loans on farm lands all over the country. We have established a United States Shipping Board with its Emergency Fleet Corporation, and have put the government into the commercial shipping business, with results known to all.

"We have given important authority to the Secretary of Agriculture in connection with the operation of grain exchanges. In this same period by constitutional amendment we have given the Federal government the right to impose taxes upon all incomes from whatever source derived.

"This tremendous extension of Federal power, together with Federal aid development, has resulted in establishing at Washington, with branches all over the country, a vast governmental machinery, so powerful, so complicated that the average citizen is utterly unable to comprehend it.

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Leading Mills throughout the  
country on all classes of work



**Cotton Mill Processes and Calculations**

(Continued from Page 19)

The calender rolls may be left off the machine entirely, and the cloth rolled up on a device near the measuring roll.

The shearing part may be left off entirely or the number of shears reduced. The same applies to all of the various rolls. Machines are made with simply bristle brushes or with brushes and beaters, and in many combinations of the elements shown, according to the thoroughness of the cleaning required.

333. The drawing shows more operations on bottom side of cloth than on top side. It is intended that the bottom side of cloth in this machine shall be the side that was woven up, in the loom. This is called the "thread side" of the cloth, and is also the "face" of the cloth. The broken threads and ends of filling are more numerous on this side than on the other, and so the machine is designed to do more work on that side.

**GENERAL DATA.**

334. The machine shown is made to take cloth, up to 44 inches wide. It occupies a space of 6½ feet wide and 13 feet long. It requires about 3 horse power to operate it. It is driven by pulleys 14 x 3½ and should run 400 revolutions per minute. At this speed, it will finish about 125 yards per minute. It may be run 500 to 600 revolutions per minute; but this is too fast for good work. It may be run slower than 400 if desirable.

335. The "hand" of the machine is determined by standing in front or at the point where cloth enters the machine, and noting whether pulleys are on right or left hand. To avoid confusion as to which might be called the "front," it is better, in referring to the hand, to state whether driving pulley is on right or left hand side when standing where cloth enters.

336. The price and weight of these machines vary greatly with the specifications. The machine shown in Fig. 54 weighs about 8,000 pounds. Without steam calender, it would weigh about 4,000 pounds.

**SPECIFICATIONS.**

337. Following is a sample blank to be filled out in ordering brushers:

Number of Machines \_\_\_\_\_  
 Number Right Hand \_\_\_\_\_  
 Number Left Hand \_\_\_\_\_  
 Widest Cloth to be Brushed \_\_\_\_\_  
 Yards Per Minute \_\_\_\_\_  
 Size Driving Pulley \_\_\_\_\_  
 Speed Driving Pulley \_\_\_\_\_  
 Driven from Above or Below \_\_\_\_\_  
 Number of Steel Beaters: Top of Cloth \_\_\_\_\_ Bottom \_\_\_\_\_  
 Number of Emery Rolls: Top of Cloth \_\_\_\_\_ Bottom \_\_\_\_\_  
 Number of Bristle Brushes: Top of Cloth \_\_\_\_\_ Bottom \_\_\_\_\_  
 Number of Card Brushes: Top of Cloth \_\_\_\_\_ Bottom \_\_\_\_\_  
 Number of Shear Blades: Top of Cloth \_\_\_\_\_ Bottom \_\_\_\_\_  
 With Cloth Roller or Steam Calender \_\_\_\_\_  
 If with Steam Calender \_\_\_\_\_  
 Size of Bottom Rolls \_\_\_\_\_; Top Rolls \_\_\_\_\_  
 With or Without Differential Gears \_\_\_\_\_  
 With or Without Vapor Cylinder \_\_\_\_\_  
 Space Occupied: Width \_\_\_\_\_ Length \_\_\_\_\_  
 Maker \_\_\_\_\_  
 Purchaser \_\_\_\_\_  
 Price \_\_\_\_\_  
 Terms \_\_\_\_\_  
 Remarks \_\_\_\_\_

**SUPERINTENDENTS AND OVERSEERS.**

We wish to obtain a complete list of the superintendents and overseers of every cotton mill in the South. Please fill in the enclosed blank and send it to us.

1923

Name of Mill \_\_\_\_\_

Town \_\_\_\_\_

Spinning Spindles \_\_\_\_\_ Looms \_\_\_\_\_

Superintendent \_\_\_\_\_

Carder \_\_\_\_\_

Spinner \_\_\_\_\_

Weaver \_\_\_\_\_

Cloth Room \_\_\_\_\_

Dyer \_\_\_\_\_

Master Mechanic \_\_\_\_\_

Recent changes \_\_\_\_\_

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**"Shiners"**

(Tight Picks)

in

**Rayon Weaving**

use

**FORMULA 615****Neutrasol Products Corporation**

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That Satisfies"*

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ATLANTA, GA.

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Telephone Main 0517

Folder.—Fig. 55.—LETTERING.

- A Roll of Cloth.
- B Feed Roll.
- C Zinc Scray.
- D Folding Blades
- E Crank.
- F Stationary Upper Jaw.
- G Spring for Lower Jaw.
- H Jaw Rod.
- J Jaw Openers.
- K Cams.
- L Jaw Treadle.
- M Cloth, Being Folded.

Folder.—PROCESS.

338. Large roll of cloth is taken from the brusher and put up on stands behind folder. Cloth is fed between two wooden rolls and delivered by them into the scray, which is a zinc trough for holding a surplus of several yards, for the reciprocating arms of the folding mechanism to draw from.

Cloth is threaded through machine as shown. There is a guide on top of machine for each edge of cloth. It is passed

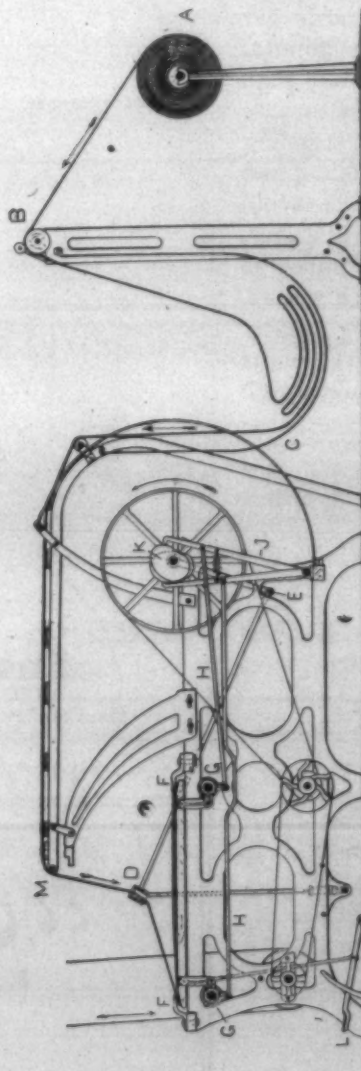


Fig. 55. Cloth Folder.

through blade of folder, the treadle is pressed to open a jaw and receive one end of a fold. The treadle is fastened and machine started.

339. The jaws on table are made to open and receive and

## Dixon's Aluminum-Graphite Paint

Prepared primarily to meet requirements of gas, oil and industrial companies and particularly recommended wherever a light colored paint is desired.

Back of this new product stands our century-old reputation, as well as 65 years' experience in paint manufacturing.

Dixon's Aluminum Graphite Paint is composed of aluminum and flake silica-graphite as a pigment and boiled linseed oil as a vehicle. The aluminum is of flake formation and thus easily combines with the flake graphite, lapsing over like fish scales and providing covering of unusual elasticity and durability.

The value of flake graphite as a pigment has been thoroughly proven and is generally accepted. The combination of aluminum and graphite results in a paint that is not affected by gases, fumes, and which resists sunlight, air and moisture. Reflecting light and heat, it will keep the temperature of tanks, etc., considerably lower than is possible with darker paints. Ask for Circular 176-AB.

Additional information and prices will be sent upon request.

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hold each fold as it is delivered. The folding bar is operated from a pair of cranks on the crank shaft. The jaws on the table are opened and closed by means of cams on the crank shaft.

340. The jaws hold the cloth at each end of the folds. The central part of cloth not being held down, will appear thicker. If only 40 to 60 yards are to be put up in a piece, this does not matter. But if "long cuts" (100 to 120 yards) are to be folded, this puffing up in the middle of cloth would tend to pull it out of the jaws. To obviate this, the table is sometimes made with a "drop centre." The centre of the table has a hinge in it, which allows the centre to drop a trifle below the ends, and the puffing effect is on the under side, instead of top side; and there, it does no damage.

341. The cranks are adjustable within a small range, so that the length of cloth in a fold may be varied a small amount to suit the requirements. Ordinarily cloth is put up in 1 yard folds. Some Superintendents want to give  $\frac{1}{4}$  inch short measure, and some  $\frac{1}{4}$  inch full measure. It makes but little difference in the income to the mill, how the measure runs, for the reason that the stated number of yards in a piece must weigh a stated amount. If the goods made are to be 4 yards to the pound, the weight of yarn in the cloth must be so adjusted that what is put up for 4 yards (be it long or short) must weigh a pound. But there is a difference when it comes to the retail trade, for the reason, generally speaking, that no attention is paid to small differences in weights—a yard being a yard. Hence a mill must be governed, in the matter of long and short measure, by the requirements of the purchaser.

For some purposes, cloth is required to be put up in  $1\frac{1}{2}$  yard folds. This would require a machine made for the purpose.

342. The man who runs the folder watches for the "cut marks" on the cloth, and stops the machine and cuts the cloth at the cut marks. Generally he counts the folds as they are being made and when the price is cut off, marks the number of yards with a pencil on the piece. Sometimes, when the machine runs very fast, he counts the folds after taking piece out of folder.

343. Frequently the folder is used also as an inspecting machine. This is not the best practice, but will answer very well for common goods if folder is run slow enough, say 50 yards per minute. In a small mill, where one folder can do all the work required, this slow speed is not objectionable. If twice this amount is required, it is better to run the folder at 100 yards per minute, and get an inspecting machine. About 75 yards per minute is a good average speed.

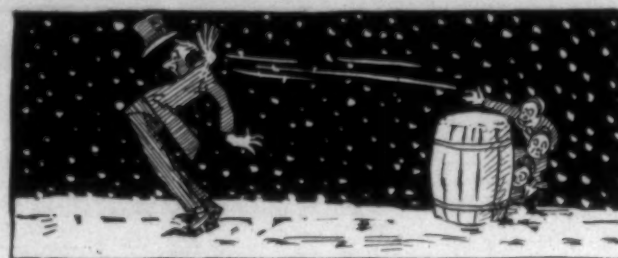
344. The machine shown in Fig. 55 has what is known as a "low back." The back at M stands about 5 feet from the floor. Machines are also made with "high front," in which the cloth roll is put up behind the operator, and cloth is fed over his head.

A 40-inch folder weighs about 1,500 pounds, and is about 5 feet wide and 12 feet long, including cloth roll.

#### Specifications.

345. Following is a sample blank to be filled out in ordering folders:

Number of Machines \_\_\_\_\_  
 Number Right Hand \_\_\_\_\_  
 Number Left Hand \_\_\_\_\_  
 Widest Cloth to be Folded \_\_\_\_\_



## How White is the "Driven Snow"?

It can only be compared  
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## Index To Advertisers

Where a — appears opposite a name it indicates that the advertisement does not appear in this issue.

Page	Page
<b>-A-</b>	<b>-L-</b>
Akron Belting Co. — 29	Ladew, Edward R. Co. — 89
Allis-Chalmers Mfg. Co. —	Lane, W. T. & Bros. — 32
Aluminum Company of America —	Langley, W. H. & Co. — 32
American Cellulose & Chemical Mfg. Co., Ltd. — 11	Leslie, Evans & Co. — 32
American Moistening Co. — 23	Lestershire Spool & Mfg. Co. — 22
American Schaeffer & Budenberg Corp. —	Liberty Mutual Insurance Co. —
American Textile Banding Co. — 32	Link-Belt Co. —
Amory, Browne & Co. —	Lowell Shuttle Co. —
Arabol Mfg. Co. —	<b>-M-</b>
Arnold, Hoffman & Co. — 38	Macrodi Fibre Co. —
Ashworth Bros. —	Marston, Jno. P. Co. —
Associated Business Papers, Inc. —	Mathieson Alkali Works —
Atlanta Harness & Reed Mfg. Co. — 26	Mauney Steel Co. — 31
<b>-B-</b>	Memphis Cotton — 23
Bahnson Co. — 1	Merrow Machine Co. — 23
Bancroft, Jos. & Co. — 32	Moreland Sizing Co. — 39
Barber-Colman Co. — 32	Morse Chain Co. —
Barber Mfg. Co. — 40	Mossberg, Frank Corp. —
Blackmer Rotary Pump Co. — 29	Mossberg Pressed Steel Corp. —
Bond, Chas. Co. — 17	<b>-N-</b>
Bosson & Lane — 33	National Aniline & Chemical Co. —
Bradley, A. J. Mfg. Co. —	National Oil Products Co. — 18
Broadway Central Hotel — 54	National Ring Traveler Co. — 33
Brown, David Co. — 24	Neutrasol Products Corp. — 25
Butterworth, H. W. & Sons Co. —	Newburger Cotton Co. — 31
<b>-C-</b>	Newport Chemical Works, Inc. — 6
Carrier Engineering Corp. — 25	N. Y. & N. J. Lubricant Co. —
Catlin & Co. — 33	North Carolina Cotton — 31
Charlotte Leather Belting Co. — 40	Norwood Engineering Co. — 34
Charlotte Manufacturing Co. — 2	<b>-O-</b>
Chicago Belting Co. —	Oakley Chemical Co. —
Cocker Machine & Foundry Co. — 40	<b>-P-</b>
Collins Bros. Machine Co. —	Page Fence & Wire Products Assn. — 30
Cooper-Hewitt Electric Co. —	Page-Madden Co. — 30
Corn Products Refining Co. —	Parker, Walter L. Co. —
Courtney, Dana S. Co. —	Parks-Cramer Co. —
Crompton & Knowles Loom Works — 4	Penick & Ford, Ltd. —
Crump, F. M. & Co. — 32	Pure Sanitary Drinking Fountain Co. —
Curran & Barry — 24	<b>-R-</b>
Curtis & Marble Co. —	Reeves Brothers, Inc. — 32
<b>-D-</b>	Rex Engineering Corp. —
Dary Ring Traveler Co. — 42	Roessler & Hasselacher Chemical Co. — 27
Davidson, Jos. L. Co. —	R. I. Warp Stop Equipment Co. — 22
Deering, Milliken & Co., Inc. — 32	Rice Dobby Chain Co. — 34
Dixon Crucible Co., Joseph — 26	Rogers Fibre Co. — 13
Dixon Lubricating Saddle Co. — 28	Root Co. —
Drake Corp. — 9	Roy, B. S. & Son —
Draper, E. S. — 22	<b>-S-</b>
Draper Corp. —	Saco-Lowell Shops —
Dronfield Bros. — 40	Scott, Henry L. & Co. — 24
Druid Oak Belting Co. — 23	Seaboard Ry. —
Dunning & Boschert Press Co., Inc. — 23	Sellers, Wm. & Co. —
Duplan Silk Corp. —	Seydel Chemical Co. — 30
DuPont de Nemours, E. I. & Co. —	Seydel-Woolley Co. —
<b>-E-</b>	Siggers & Siggers — 26
Eaton, Paul B. — 26	Sirrine, J. E. & Co. —
Eclipse Textile Devices, Inc. —	Sluaghter, G. G. —
Economy Baler Co. — 38	Smith, Malcolm & Co., Inc. —
Emmons Loom Harness Co. — 31	Sonneborn, L., Sons — 21
Entwistle, T. C. Co. —	Sonoco Products —
<b>-F-</b>	Southern Ry. —
Fales & Jenks Machine Co. —	Southern Spindle & Flyer Co. —
Farish Co. — 22	Spray Painting & Finishing Equipment Sales Co. — 23
Ford, J. B. Co. — 27	Stafford Co. —
Fournier & Lemoine —	Steel Heddle Mfg. Co. — 15
Franklin Process Co. —	Stein, Hall & Co. —
<b>-G-</b>	Sydnor Pump & Well Co. — 23
Garland Mfg. Co. —	<b>-T-</b>
General Dyestuff Corp. — 2	Terrell Machine Co. —
Geist Mfg. Co. — 19	Textile Finishing Machinery —
General Electric Co. —	Textile Mill Supply Co. —
Georgia Webbing & Tape Co. —	Thomas Grate Bar Co. — 19
Graton & Knight Mfg. Co. —	Tolhurst Machine Works —
<b>-H-</b>	Tripod Paint Co. — 33
Hart Products Corp. —	<b>-U-</b>
H. & B. American Machine Co. — 10	United Chemical Products Co. — 33
Hollingsworth, J. D. — 34	U. S. Bobbin & Shuttle Co. —
Hopedale Mfg. Co. —	U. S. Ring Traveler Co. — 34
Houghton, E. F. & Co. — 5	Universal Winding Co. — 34
Herald Square Hotel — 26	<b>-V-</b>
Howard Bros. Mfg. Co. —	Victor Ring Traveler Co. —
Hunt, Rodney, Machine Co. — 12	Vogel, Joseph A. Co. —
Hyatt Roller Bearing Co. —	<b>-W-</b>
<b>-I-</b>	Washburn Printing Co. — 39
Industrial Fibre Co. —	Watts, Ridley & Co. — 33
International Salt Co., Inc. — 19	Wellington, Sears & Co. —
<b>-J-</b>	Whitin Machine Works —
Jacobs, E. H. & Co. —	Whitinsville Spinning Ring Co. — 26
Jordan Mfg. Co. —	Williams, J. H. Co. — 2
<b>-K-</b>	Wilts Veneer Co. — 26
Kaunagraph Co. — 3	Wolf, Jacques & Co. —
Keever Starch Co. —	Woods, T. B. Sons Co. —
Klipstein, A. & Co. —	Woodward, Baldwin & Co. — 32
	Waterall, Wm. & Co., Inc. — 12

### Length of Folds

For Long or Short Cuts

Drop Centre or Plain Table

Low Back or High Front

Number of Yards to Fold per Minute

Size Driving Pulley

Speed Driving Pulley

Belted From Above or Below

Space Occupied: Width Length

Maker

Purchaser

Price

Terms

Remarks

### Stamping.

346. When cloth goes from the mill to the bleachery, it is not stamped. When it is made for consumption without further treatment each piece is usually stamped. Mills with less than 300 to 400 looms generally stamp goods by hand. Larger mills have stamping machines.

The usual hand stamping outfit consists of a "head-piece," name, weight mark and yard mark. The head piece is some fanciful design, used as a sort of trade mark. The name may be the corporate name of the mill or any other name not already in use by some other mill. The weight mark is for the purpose of indicating the weight per yard of the cloth. It may be any arbitrary letter or combination of letters, as AA or LL. It may also be figures, as 2.85, indicating that there are 2.85 yards per pound. This is the simplest and best way. The yard mark simply shows the number of yards in the piece.

Mills always have at least two different sets of stamps; one for the first quality and one for the second. If different kinds and weights of goods are made, different stamps are required. It may be arranged to use the same stamps that are designed to use by hand.

The stamps are generally made of copper strips inserted edgewise in the face of a block of hard wood. Each design should be on a separate block, so that no one block will be too large. Most sheetings are put up in yard folds. The piece is folded once over itself, thus showing 18 inches face. For goods folded this way, none of the stamps should be more than 15 inches wide.

The yard mark is usually two figures on one block, say 40, 50, 51, 51½, etc. This requires a large number of blocks to cover the range of variation in length; but it is a better way than to have single figures made on a block, as 4 on one block and 5½ on another, to mark 45½.

The ink for stamping is distributed with a brush on the ink pad. The pad may be made of folds of soft cloth, but the best pad is an iron box filled with water, with a sheet of rubber clamped down on the top like a cover. One thickness of flannel is laid on this, and the ink put on with a brush. The water forms a firm smooth back to the pad, and ensures an even distribution of ink on the stamp.

### INK.

347. The ink is commonly blue and is made of ultramarine mixed with gum Arabic or some other gum, to give it body and make it adhere to the cloth. Sometimes red ink is used; but it is much harder to mix and use than the blue. English vermilion is the most common pigment for making red stamping ink. Recipes for making stamping ink may be found in the Appendix.

(Continued next Week)

## DIXON LUBRICATING SADDLE CO.



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WRITE FOR SAMPLES  
BRISTOL, RHODE ISLAND



## Manufacture of Fancy Goods—2

(Continued from Page 12)

the pattern calls for colorful effects extending transversely with the piece, and most fancy goods do in this age of alluring tints and hues in dress fabrics and all kinds of fabrics. The weaves included in the third method also demand the employment of a fancy loom for their execution as the designs productive of thread changes cannot be made with two or three or even four leaf cams. The color combinations of the warp would be obtained by fancy warping in the preparation of the warp, but the color combinations in the filling will necessitate the employment of two or more shuttles and therefore the box motion of a fancy loom would be essential. The fourth method of weaving depends essentially upon harness and shuttle work and requires the use of a fancy loom.

### Compass of Plain Looms Not so Narrow as Some Suppose.

The compass of the plain cam loom is not as narrow as some men suppose. I have been employed as a fixer or in higher capacity in mills at times when it has become necessary to weave twilled dress fabrics, cotton shirtings with fancy stripes, doeskins, venetians, towings of a somewhat intricate design for a plain goods mill, and similar fabrics on looms originally installed for the weaving of plain cotton cloths. Looms which were equipped for carrying two open shed principle with tappets. Regardless of the limitations of patterns production we got out some very satisfactory fabrics which rightly should have been made on fancy looms. The shifting fashions of this age often make it necessary for the entire weaving room force to scheme and plan in order to make plain looms weave fabrics which could be woven to better economic advantage on looms originally designed for fancy work. In the case in question we had special tappets made. Ordinarily each revolution made by a cam or tappet represents one series of changes of the harness it actuates in the weaving of the pattern. We had to have a six harness weave for some venetians and the tappets were made as shown in the drawing.

The projection at 1 elevated the harness for the first pick and the depression at 2 lowered it for the second pick. The projection at 3, 4 and 5 elevated the harness and kept it up for the third, fourth and fifth picks and the depression at 6 lowered it for the sixth pick. Then the repeat started. In like manner we occasionally had other forms of tappets made in the machine shop of the mill for the purpose of weaving fancy cloths on plain looms.

### Henry Ford Will Help New England Fight South

Boston, Mass.—Answering the appeal of the Associated Industries of New England, Henry Ford has consented to lend his personal efforts and staff toward "Fordizing" the manufacturing industries of New

England, according to an announcement.

"Fordize New England if you want to save her manufacturing industries from the competition of the New South," was the advice given in the early part of the week by E. A. Filene, Boston's largest merchant, and acted upon by the Associated Industries.

The Detroit manufacturer, stopping at his recently acquired property, Wayside Inn, at Sudbury, just south of Boston, consented to review the New England situation and following a conference with a representative committee declared that mass production and mass distribution as best exemplified by his own factories would solve the problem of New England industries.

"What we have done with our Detroit factories can be done by New England industries and will save your manufacturers from the industrial activities of the New South," declared Ford.

"Your New England industries need mass production and mass distribution. These factors are accountable for the remarkable growth of the South industries as displayed in the Carolinas.

Ford, characterized as the greatest producer of all time, will devote his personal time and that of his production staff to the originating of a committee of New England manufacturers during the month of April.

"In New England today, there are facilities for excess production," Mr. Ford declared. "If this excess is properly produced and distributed then the super-competition of the Southern States will cease. The troubles of the New England manufacturers will be at an end. But," he continued, "this must be accomplished in the proper manner the proper methods must be used.

"There is no reason why the cotton industry of New England should suffer from Southern competition. The same applies to other necessities of life. The best guarantee for New England will be well paid, well satisfied consumers with mass production and mass distribution. Such methods are used by us in Detroit and exactly the same methods will place New England in the position she once enjoyed, the greatest industrial section of the country. The competition of the New South can be met and overcome."

### Textile Cost Accounting.

During the week of March 22nd to 29th there will be given at the Textile School of the North Carolina State College, Raleigh, a series of lectures on cost accounting for cotton mills. These lectures will cover average cost, its value and how obtained, then each roving and yarn number will be figured separately. Finally, individual fabric cost will be calculated, including the distribution of general expenses.

The Textile School has obtained the services of Isaac L. Langley, a textile cost accountant connected with the Consolidated Textile Corporation with offices at Lynchburg, Virginia to give these lectures. Mr. Langley is a graduate of the Textile School, Class of 1923.

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is the

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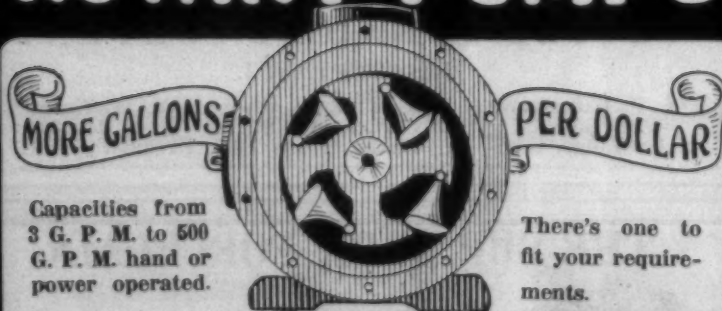
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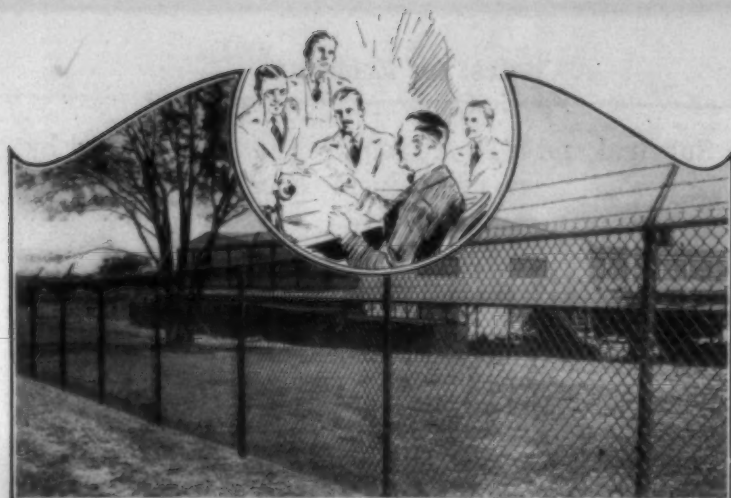
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GRAND RAPIDS (FORMERLY PETOSKEY) MICH.





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Poor Fencing is responsible for red-ink entries on the books of hundreds of factories—losses that have come from one or more of these causes:

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5. Vandalism
6. Damaged Property
7. Accidents
8. Interference to Employees

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manufactured by

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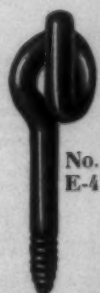
Samples and Catalog upon Request



No. 654



No. 844



No. E-4

## Ventilating the Dyehouse

(Continued from Page 10)

the low pressure multi-blade fan in front of the heater unit, the warm air distributing ducts, and possibly some low pressure exhaust fans or disc fans. The highly saturated air passes upward and through the roof of the building by means of ventilators or is exhausted outside by the disc or centrifugal exhaust fan. The fresh warm air always coming in creates a natural flow which forces the moisture laden air outside. In the case of other floors being built on top of the dye room, it is then necessary to exhaust the air through openings in the wall, but this method is noticeably less satisfactory than the former.

In New England and in a few of the other Eastern States—these sections constituting for the United States what the Manchester and Birmingham districts represent for England—are to be found the most striking examples of mechanically ventilated dye houses and bleaching plants. To consider but two or three of the most notable, mention can be made of the Sanford Mills, at Sanford, Me.; the Firth & Foster Co., of Philadelphia; the first mentioned of these dyehouses, the Sanford Mills, presents several unusual features from the ventilating engineering standpoint and aptly illustrates the point made earlier that each case must be considered first hand and recommendations made accordingly.

The dye house is of reinforced concrete construction throughout, one story high and consists of two bays each 38 feet wide, 108 feet long and 16 feet high. The dye tubs are arranged along the sides and set over ditches. The roof pitches toward the centre of each bay and is carried by concrete girders 20 inches wide and 40 inches deep on 11 feet centres. These form pockets in the roof and make it necessary to use a special duct construction to prevent roof condensation. The concrete construction in itself is a serious setback from the ventilating engineering standpoint due to the increased liability of roof condensation.

The total cubical contents of both bays is approximately 140,000 cu. ft. Because of the low head room, the large floor area covered by the machines and the concrete construction of the building equipment was installed providing for a two minute air change. To accomplish this, the ventilating apparatus must handle 70,000 a. p. m. It consists of a No. 15 Niagara Conoidal Fan and pipe coil heaters for warming the air before it passes into the ducts at a temperature of 100 deg. Fahr.

The layout of this mill provides for two rows of dye tubs in each bay, each tub so situated as to be directly under the space between the roof girders. In order to lead away the fumes and mist arising from these tubs it is necessary to run a duct between each set of girders and to blow both ways from the centre of each bay towards dye tubs at each side. In this way the air is caused to flow across the dye tubs, thereby dissipating the steam and water vapor given off and at the same time, a continuous flow of this

moisture laden air is promoted outside without its coming into contact with any cool surfaces which would tend to make the moisture condense. In these bays, end ducts are also provided which blows along the working aisle down the centre of each bay. These were found necessary in order to overcome the liability to drafts. In addition they help materially in keeping these aisles free from visible fog.

Not the least of the difficulties encountered here was that having to do with the great depth of the girders. As is well known the big problem raised in dyehouse ventilation is that of keeping the roof dry. The pockets between the deep girders make it impossible to sweep the roof with a single set of outlets, so that a 6 x 6 inch duct is run into each pocket, with small nozzles for sweeping the ceiling with a film of warm dry air.

## Research in Rayon Manufacture

(Continued from Page 8)

mankind, such as was done with coal tar.

### Delay Seen as Serious.

Due to the overproduction in the field of dyestuffs, attention is now focussed on developments in other fields and unless American colleges and universities are prepared to encourage work along these lines, it is going to be a serious matter for the future of the American textile industry.

In the writer's mind, there is no doubt but that a number of the developments hinted at above will become realizations within the next few years and unless such developments are participated in by American scientists and technologists, it will simply mean that the American manufacturer will be under the necessity of purchasing the American rights for these new methods with consequent increases in the cost of the finished products to the American public.

It is, therefore, of the greatest importance that this question of fundamental research should be thoroughly understood and appreciated as something altogether different from that of the laboratory testing of dyestuffs or fabrics; that this embraces the discovery and development of laws relating to the chemical properties of our everyday wear and our everyday food, and on which the technical developments leading to the higher standard of living, whether expressed in more durable and artistic clothing or in the formation of cheaper and better food at lower cost, is to be realized.

## Continued Expansion in British Rayon Industry

THE rapid development of rayon (artificial silk) manufacturing in the United Kingdom, where its progress has been particularly striking in the last two years, was given a further impetus in 1925 by the imposition of import duties on silk and rayon and manufactures thereof, effective July 1, according to reports to the Textile Division,



Department of Commerce, from London.

Reliable estimates place the 1925 production in Great Britain at 30,000,000 to 32,000,000 pounds—an increase of 25 to 33 per cent over the 1924 output of approximately 24,000,000 pounds. This increase closely parallels the rapid expansion and growth of the rayon industry and trade throughout the world.

The 1925 expansion in this industry, aside from the growing demand for the product, may be attributed to the large profits of established companies and the publicity given the trade last summer through the imposition of a duty on imports and an excise tax on domestic production of rayon. This legislation resulted in the formation of a number of new companies, the majority of which were concerned with the production of rayon, such firms as were interested in silk goods being of lesser importance. In answer to a question in the House of Parliament, the statement was made that 46 new companies for the manufacture of silk goods and rayon, with a total nominal capital of £4,000,000 were registered in Great Britain between July 1 and the middle of December, 1925.

The announcement of the Chancellor of the Exchequer in the early summer that an import tariff and an excise duty on rayon would be included in the budget aroused a storm of protest from the textile trades, particularly the cotton and wool industries. After considerable debate the proposed law with modifications became effective last July 1. The excise duty, applying to goods manufactured in Great Britain and North Ireland, is 1s. per pound on single rayon yarns and 6d. per pound on rayon waste. The present tariff assessment on imported single and double or twisted rayon yarns is 2s. and 3s., respectively, per pound. The customs duty on tissues or fabrics is 3s. 6d. per pound and on waste or staple fiber, 1s. per pound. Rayon producers are paying the excise duty to the Government without a corresponding advance in prices to their customers. The law further provided for rebates on exports of rayon. On account of the increasing use of rayon in mixtures by the cotton and wool trades the imposition of the duty resulted in considerable confusion in these industries. The rebate scheme, however, is gradually being arranged to avoid as little disturbance as possible in the trade, through the co-operation of manufacturers' committees with the Customs Department.

The imposition of the new import duties resulted in heavy arrivals of foreign silk and rayon goods prior to July 1, 1925. Imports of rayon yarn, thread, artificial straw, and rayon manufactures, except apparel and embroidery, rose from £5,514,102 in 1924 to £6,889,111 in 1925; of these amounts, goods worth £653,132 and £695,970, respectively, were reexported. The effect of the duty may be gauged by the fact that 77 per cent of the 1925 imports of rayon yarn and manufactures entered during the first six months of the year.

Italy, a producer of relatively low price yarns has been most affected

by the tariff, and imports from that source are steadily declining. The difficult Italy is experiencing in marketing its yarns in Great Britain since the new tariff became effective may have led to the recent announcement that the largest Italian manufacturers of rayon are seeking a suitable site for the erection of a plant in Northern England for the production of a wool substitute known as "Sniafil." Their product is expected to be put on the British market before long and may prove of great importance to the Yorkshire wool and textile industries. An article in the "Financial News" stated that the branch contemplates an initial production of 5,000 pounds daily. The writer of the aforementioned article does not think that Sniafil will injure the sale of wool, but believes that the greatest competition will be with the best qualities of wool.

Coincident with the increase in imports of rayon yarns and manufactures, a gain occurred in exports which rose from £4,310,612 in 1924 to £5,363,988 in 1925. During 1925, Canada, Australia, India, and the United States were the principal markets for British rayon yarns.

The influx of foreign goods on the market prior to July 1, 1925 has resulted in the accumulation of enormous stocks of silk and rayon and of all types of goods made from these materials in various stages of manufacture in Great Britain. The duties were announced on April 30. One large department store in London, is reported, purchased a number of unoccupied private houses into the country during May and June. This condition of affairs naturally reacted unfavorably for domestic manufacturers, although increasing exports have somewhat compensated for the glutted home market. Moreover, as is frequently stated, the present superfluous stocks are temporary.

The duty on rayon yarns is not high enough to afford a very great measure of protection, it is said, and the expansion of the domestic rayon industry during 1925 can hardly be attributed to the tariff. It probably would have taken place in any case although it is not unlikely that a few of the smaller companies have attracted the investor more than would have been the case had there been no duties. The duties on both silk and rayon hosiery and ready-to-wear garments, however, are highly protective and have resulted in the establishment of a number of continental companies in England.

British concerns, particularly those manufacturing silk and rayon hosiery are also expected to benefit considerably in the home market. This, added to their apparent gains in foreign countries during 1925 points to increasing prosperity in the British silk and rayon industries.

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Grey Goods, Print Cloths, Twills, Sheetings, Pajama Checks, Arcadia Mills,  
Spartanburg, S. C., Clinton Cotton Mills, Clinton, S. C., Hermitage Cotton Mills,  
Camden, S. C., Mills Mill, Greenville, S. C., Osage Mfg. Co., Bessemer City, N. C.

## Cotton Goods

New York.—Sales of cotton goods last week were made up principally of small orders at close prices. There was further talk of curtailment due to the lack of demand and the unsatisfactory prices prevailing on most lines. Several contracts for sheetings and print cloths for delivery in April and June were reported at prices lower than most mills would accept.

Lower prices were named on heavy cotton goods which were inactive last week, the new quotations being the lowest seen in several years. Print cloths have been moderately well sold for April and some of the medium weight sheetings are well under for the next few weeks. Business for the summer months is below normal, however, and fall goods have not moved in the usual quantities.

The demand for printed cottons, rayons and silk and cotton mixtures continued active and some of the wider sheetings also sold well. Trade in bleached cotton was rather slow. Orders for gingham for fall trade have been small although prices are lower than they have been in some years. There was a smaller demand for duck and tire fabrics and convertibles were generally slow.

There was little effort on the part of either producers or buyers to make future contracts during the week. However, the total volume of business done in small lots for quick shipment was fairly large. The greatest complaint of market conditions was that of the extremely low prices offered by buyers. Toward the end of the week there were many bids for large quantities of print cloths and sheetings wanted for delivery in the third quarter of the year, but buyers were so much below mills' prices that only a small amount of business was put through. There were bids in 68x72s at 8½ cents and 64x60s at 7½ cents. Under 6½ cents was bid for 60x48s. Sales of spot 68x72s were at 9 cents and 64x60s at 7½ cents. The market on 72x76s was 10½ cents spots and 10 cents contract; 80 squares quick 11½ cents and April 11½ cents. The 7.15-yard were available at 6 cents to 6½ cents; 8.20-yard, 5½ cents to 5½ cents; 6.40-yard, 7 cents, 6.60-yard, 6½ cents; 64x56s, 7½ cents.

Trading in sheetings was confined to few sales of small size. Quotations showed no change from that of previous days of the current week. Spot 56x60s 4-yard were to be found at 10 cents and April 9½ cents. A few middle of April 2.85-yard possible at 6½ cents and a few spots sold at 7½ cents. The market on 36-inch 5-yard was 7½ cents

April. The best heard on standard 6.15-yard sheetings was 6½ cents to 6 1-16 cents according to quantity and delivery.

A number of bids for quantities up to a million yards was noted in pajama checks. Mills quoted 72x80s at 9½ cents and 64x60s 7½ cents for the last half of the year. The bids were sometimes as much as ½ cent under these levels. A few 4-yard twills sold at 11½ cents and Southern 4.20-yard sateens at 12 cents. A fair volume of specially business was done on contract and out of stock.

Some of the best makes of low count carded broadcloths were being sought at under general quotations. There were a number of orders amounting to a few thousand pieces each, which indicates a somewhat better interest than had obtained earlier in the week. Deliveries through April were wanted, in some instances. There were a number of stories regarding the 90x60. It was understood, for instance, that a small quantity of a fair make had been obtained at 11 cents. On the other hand, efforts to buy several thousand pieces of the best known makes had been unsuccessful, most centers continuing to ask 11½.

The general situation in fine goods was far from satisfactory for the large majority of operators. There were a number of bright spots and one of them was the occasional report of mills that they had sold up to two weeks production during the week on the looms under commitment. The prices were not described as remunerative, yet they were on the basis of competition. The business ranged between coarse yarn fancies to curtain materials and rayon alpacas.

The Fall River print market for the week showed but little activity, totals sales being estimated at 35,000 pieces. Trading was slightly less than last week, with the character of buying being mostly hand-to-mouth.

Cotton goods prices were quoted as follows:

Print cloths, 28-in., 64x64s	6
Print cloths, 28in., 64x60s	5½
Print cloths, 27-in., 65x60s	5½
Gray g'ds. 38½-in., 64x64s	8½
Gray goods, 39-in., 68x72s	9
Gray goods, 39-in., 80x80s	11½
Brown sheetings, 3-yard	12½
Brown sheetings, 4-yard	10½
Brown sheetings, stand.	13½
Ticking, 8-oz.	22
Denims	17½
Staple gingham, 27-in.	9
Kid finished cambrics	8½ a9½
Dress gingham	12½ a16½
Standard prints	9½

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# The Yarn Market

Philadelphia, Pa.—There was little change in the yarn situation during the week. Actual business continued on a limited basis, with the bulk of actual trade made of small lots for quick delivery. Such business reached a fair total and provided a fair yarn movement. The price situation continued to show considerable irregularity. Dealers prices were considerable below what mill would accept and spinners asserted that on sales reported at very low prices, the yarn was not up to standard. The decline in prices was halted before the week ended and many factors in this market seem to think that prices will hold around the present level. One encouraging feature of the situation has been that there have been no reports of distressed yarns being sold at low prices. Spinners in the South have not forced sales and according to reliable information, have not accumulated large stocks. Both spinners and yarn consumers seem able to wait long and are showing little interest on yarns for future delivery. A great many Southern spinners have considerable business on their books yet. There is a good deal of talk of curtailment and it is believed that the mills will curtail before piling up stocks.

Fine combed and mercerized yarns continued dull throughout the week, with no business reported except on a spot basis. The Gaston county mills are curtailing, but have not increased their idle time, as was reported in the markets during the week.

The quoted list in this market was as follows:

Southern Two-Ply Chain Warps.	
8s	33 1/2 a
10s	34 1/2 a
12s	35 1/2 a
14s	36 1/2 a
16s	37 a37 1/2
20s	40 1/2 a
24s	41 1/2 a42 1/2
26s	43 1/2 a44 1/2
30s	53 a54
40s	59 a61
50s	67 a69

Southern Two-Ply Skeins.	
8s	33 1/2 a
10s	34 a
12s	34 1/2 a
14s	35 a
16s	35 1/2 a
20s	36 1/2 a
24s	39 1/2 a
26s	41 a41 1/2
30s	43 a43 1/2
36s	50 1/2 a
40s	52 1/2 a53 1/2
40s ex.	57 1/2 a61
50s	66 a67
60s	70 a71

Part Insulated Waste Yarns.	
6s. 1-ply	27 1/2 a
8s. 2, 3 and 4-ply	28 a28 1/2
10s. 1-ply and 3-ply	30 a
12s. 2-ply	31 a
16s. 2-ply	33 1/2 a
20s. 2-ply	35 a
26s. 2-ply	40 a
30s. 2-ply	41 a

Duck Yarns—3, 4 and 5-Ply.	
8s	33 a
10s	34 a
12s	34 1/2 a
16s	36 1/2 a
20s	37 a37 1/2

Southern Single Chain Warps.	
10s	33 1/2 a
12s	34 a
14s	34 1/2 a
16s	35 1/2 a
20s	36 1/2 a
24s	39 1/2 a
26s	40 1/2 a
30s	43 a43 1/2
40s	52 a

Southern Single Skeins.	
6s	33 a
8s	33 1/2 a
10s	34 a
12s	34 1/2 a
14s	35 1/2 a
16s	36 1/2 a
20s	38 a
22s	39 a
24s	39 1/2 a
26s	40 1/2 a
30s	43 a43 1/2

Southern Frame Cones	
8s	33 a
10s	33 1/2 a
12s	34 a
14s	34 1/2 a
16s	35 a
18s	36 a
20s	36 1/2 a
22s	37 a
24s	38 a
26s	39 a
28s	40 1/2 a
30s	41 a
40s	50 a

*Tying In. Southern Combed Peeler Skeins, Etc.— Two-Ply.	
16s	52 a
20s	55 a
30s	62 a
36s	68 a72
40s	70 a75
50s	80 a
60s	84 a88
70s	95 a1 00
80s	1 10a1 15

Southern Combed Peeler Cones.	
10s	43 a
12s	44 a
14s	45 a
16s	46 a
18s	47 a
20s	48 a
22s	49 a50
24s	52 a
26s	52 1/2 a
28s	53 a
30s	56 a
32s	58 a
34s	61 a
36s	66 a
38s	68 a
40s	69 a
50s	78 a
60s	82 a86
70s	93 a98
80s	1 10a

Eastern Carded Peeler Thread—Twist Skeins—Two-Ply.	
20s	48 a
22s	49 a
24s	50 a
30s	54 a
36s	57 a
40s	61 a
45s	68 a
50s	73 a

Eastern Carded Cones.	
10s	39 a
12s	40 a
14s	41 a
20s	42 a
22s	45 a
26s	49 a

## New Dupont Dye

The Dyestuffs Department of E. I. du Pont de Nemours and Company announces an entirely new gray, Pontamine Light Gray 2G, a direct dyestuff for very brilliant bluish shades of gray on cotton, silk, or rayon.

Its general fastness is very good and its fastness to light is exceptionally good for a direct color. It will, therefore, answer all of the regular requirements of any line of goods for which direct dyes are suitable.

It exhausts very well and dyes evenly and is, therefore, suitable for all types of machines. On the padder exceptionally even shades are obtained. When dyed in a neutral bath, Pontamine Light Gray 2G leaves silk practically unstained, so that it is a useful shading color for unions and half silk hosiery.

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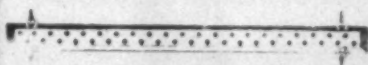
### Help Wanted

Experienced Union Special Sewing Machine Fixer. Young married man preferred. Must have common school education and ability for promotion. Give references and salary expected. Address "M D M Georgia", care Southern Bulletin.

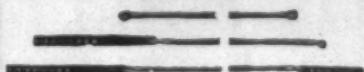
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A responsible place in a cotton mill, either in the manufacturing end or in the office. Have had experience in both. Graduate from a textile school. Have had experience in manufacturing cotton goods, and was for five years textile inspector for U. S. Government. Wish to communicate with mills wanting a good man. Address G. E. P. care Southern Textile Bulletin.

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## Southern Spinners' Bulletin

The weekly bulletin of the Southern Yarn Spinners' Association says:

Conditions in the yarn market remain quiet. Trading is light, and confined to small quantities for prompt shipment.

Prices remain at about the same level. Buyers do not seem interested in purchases even at a reduction from the present level of prices. Spinners do not seem interested in selling as the reported prices are below replacement values based on New York spots.

Although purchases have been only in small lots, and trading has been reported as light the aggregate of purchases made are considerable, not only of yarns but of other cotton goods as well. The government report shows that the amount of cotton goods consumed for the past year was fully up to normal.

Unless there is a stimulus of buying in the near future curtailment will be the order of the day. So far mills have confined their operations entirely to orders, and have not accumulated stocks.

In some sections curtailment of one day per week has already been instituted, which will doubtless be followed by further curtailment in other sections.

## Mercerizing Cloth on One Side Only

Back in 1897 a process was patented for mercerizing cloth on one side only. Little has been done about it, due probably to the lack of knowledge of its practical application, but it seems there should be some valuable features to it in giving special treatment to cloth. Those mills which have a caustic recovery plan would particularly benefit, according to the English Textile Recorder.

There is a difference in applying caustic for this method, as instead of immersing the whole cloth as is usual, a layer is put on one side only. In drying, however, the cloth must be stretched as usual above the desired width in order to produce the desired luster. In different effects in luster are wanted they can be readily produced by varying the width or tension at which it is dried.

One of the chief assets to this method of mercerizing is that a luster can be obtained on only one side. By having luster on the front of a properly constructed fabric correctly calendered, a good imitation of certain silk goods may be obtained.

### Producing Smart Effects.

A smart effect might be produced by placing a luster on the back with some sort of stripes, dots or designs on the front. In the case of piques a lustrous back might replace the present raised one to good effect. If the construction of the fabric is not close, it may be necessary to backstarch so that the caustic will not come through. Only threads on the face should get the caustic.

Cotton treated with caustic always shows a greater affinity for dyestuffs than that which has not

been treated. With this in mind it is possible to conceive of various effects of value that might be produced. If caustic is applied on front or back in stripes, dots or other designs, the dye having a greater depth of shade on these treated places will produce these effects with an improved luster.

Again, by printing with caustic, various lustrous effects may be produced on the face or back by adequate finishing operations. With material unsuitable for mercerizing one side may be dyed darker than the other by applying a coat of caustic to that side and given a luster in the calender or it may be left dull if desired.

A strikingly different finish from that of fully mercerized fabrics might be developed by treating cloth, the face of which is made of Egyptian Mako, after due mercerization on the face, with a calender of hot polished steel rolls on the Schriener Calendar.

## Texas Women Resolve to Wear More Cotton

Austin, Texas.—Women of the Travis County Council of Women will wear more cotton clothing, ban silk and satins, and encourage a demand for cotton if they carry out a decision made at the council's quarterly meeting held here.

A resolution advocating the wearing of more cotton clothes and pledging each member to wear more cotton was adopted after Mrs. Vick Boyce, one of the leaders in the movement, had introduced it. She held that since cotton was the principal Texas crop, women of the State should use more cotton. Mrs. Boyce advocated cotton dresses for all occasions.

## Will Buy Mason Machine Works

Taunton, Mass.—An agreement to sell the Mason Machine Works plant in this city to a large Chicago concern has been signed, according to a statement made by Albert I. White, of this city.

In the course of his remarks on the appropriation for widening and deepening the Taunton river before the legislative committee at the State House, Tuesday, Mr. White made this statement in support of his assertion that Taunton was far from slipping industrially, but was on its way forward.

The name of the concern was not given, but it was said that it was a large and trustworthy one, which desired an Eastern plant, and that such a plant must be conveniently located for both rail and water service.

It was also intimated that Taunton's transportation facilities had been a determining factor in influencing the agreement to buy the Mason plant.

Mr. White further went on to say that he spoke as a representative of the Mason Machine Works Co. He also cited the recent installation of 800 looms at the City Manufacturing plant on Wales street, as another decide devidence of local progress.

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The fee for joining our employment bureau for three month is \$2.00, which will also cover the cost of carrying a small advertisement for two weeks.

If the applicant is a subscriber to the Southern Textile Bulletin and his subscription is paid up to the date of his joining the employment bureau the above fee is only \$1.00

During the three months' membership we send the applicant notices of all vacancies in the position which he desires and carry small advertisements for two weeks.

We do not guarantee to place every man who joins our employment bureau, but we do give them the best service of any employment bureau connected with the Southern Textile Industry.

WANT position as superintendent of yarn mill. Am now overseer of carding and have had long and practical experience. Good references. No. 4820.

WANT position as overseer carding or spinning, prefer spinning. Practical carder and spinner who can get results. Excellent references. No. 4821.

WANT position as superintendent of small mill or overseer weaving in large mill, or assistant superintendent. Experienced on wide variety of weaves, can get production at right cost. References. No. 4822.

WANT position as superintendent, would take large weave room. Age 48, long service as both superintendent and overseer. Now employed and can give good references. No. 4823.

WANT position as overseer carding. Age 32, single, good habits. I. C. S. graduate in carding and spinning. Would like job in Texas. Now employed. Best of references. No. 4824.

WANT position as superintendent of weave mill, or would consider large weave room job. Have been on present job as overseer weaving for 7 years. Good references. No. 4825.

WANT position as overseer carding. Long experience as second hand and overseer. Now employed as overseer and giving satisfaction, but want larger place. References. No. 4826.

WANT position in mill office as paymaster, shipping clerk or timekeeper. Beginner in accountancy. Seven years experience. Age 26, married, now employed. No. 4827.

WANT position as overseer weaving on jacquard, plain work or drills. Have had 6 years experience on plain goods and drills, 10 years on jacquard damask and fancy rayon draperies. Now employed. Best of references. No. 4828.

WANT position as superintendent or manager. Practical man who has been superintendent for long period of years and can give satisfactory references to show excellent past record. No. 4829.

WANT position as overseer weaving, plain or fancy work. Fifteen years experience as overseer and can give excellent references. No. 4830.

WANT position as overseer carding. Now employed. Have had ten years experience as carder. Good references. No. 4831.

WANT position as second hand or overseer carding. Age 34, 20 years in card room. Have taken course in textile and have excellent references. No. 4832.

WANT position as overseer carding or spinning. Long experience in both rooms and can give satisfactory results. Can furnish references to show character and ability. No. 4833.

WANT position as overseer spinning, spooling and warping. I. C. S. graduate, 12 years experience. Age 39. Now employed but can change on short notice. No. 4835.

WANT position as overseer carding. Now employed as carder but wish larger place. Can handle carding or spinning or both. Have been in mill almost all my life. Twelve years as overseer. Also had long experience as overhauler. Good references. No. 4836.

WANT position as overseer cloth room. Now employed as night overseer in napping and finishing room; 12 years experience, including work on sheetings, print cloths, folding and winding. Understand upkeep of napper machines. Want day job. No. 4837.

WANT position as superintendent of yarn mill. Am practical spinner and familiar with all counts and cotton. Now employed as superintendent and giving satisfaction. Would take spinners' place in large mill. Good references. No. 4838.

WANT position as shipping or supply clerk, timekeeper or general office man. Experienced in this work and also familiar with weave room, cloth room and machine shop. Have worked in both white and colored weave mills and in yarn mills. Good references. No. 4840.

WANT position as superintendent. Am textile graduate of N. C. State College and have been superintendent of a good mill for the past 6 years. Best of references. No. 4841.

WANT position as superintendent or assistant superintendent, or overseer fancy weaving. Long experience, can get results and can keep down costs and seconds. No. 4842.

WANT position as assistant superintendent, overseer weaving or designer. Thoroughly familiar with fine and fancy weaving and can give references to show character and ability. No. 4843.

WANT position as superintendent. Now employed as superintendent, but wish larger place. My experience includes long service as superintendent and overseer. Best of references. No. 4844.

WANT position as superintendent of weave mill on plain or fancy work or would take large weave room. My experience covers wide variety of weaves and I can produce excellent results at the right price. No. 4845.

WANT position as overseer small card room or second hand in larger room. Have had 27 years experience in card room; 9 years as section man, and second hand. On present job as second hand for 2 years. Age 45, married, sober. Good references. No. 4846.

WANT position as superintendent, or overseer carding and spinning. Practical man of long experience who thoroughly understands carding and spinning. Best of references. No. 4848.

WANT position as superintendent of yarn mill, or would take carding or spinning in large mill. Good carder and spinner, can manage help and can produce quality work at low cost. No. 4849.

WANT position as overseer of carding or spinning or superintendent of small yarn mill. Qualified by experience and training to handle work in competent manner. Good references. No. 4850.

WANT position as overseer weaving. Prefer Draper or Stafford looms. Have had several years experience as erecting man. Stafford Company. Familiar with dobby work. Experience covers wide range of goods. Best of references. No. 4851.

WANT position as overseer of cloth room. Experienced man who understands cloth room work and who has had long experience in a number of good mills. Excellent references. No. 4852.

WANT position as overseer carding. Age 28, 8 years experience in card room on colored work and some on hosiery. I. C. S. student. Prefer North Carolina or Virginia. Good references. No. 4853.

WANT position as overseer carding in large mill. Now employed but have good reasons for changing. Age 36, married, of good habits. Good references. No. 4854.



# CLASSIFIED LIST OF ADVERTISERS

- Air Conditioners—**  
American Moistening Co.  
The Bahnsen Co.  
Carrier Engineering Co.  
Parks-Cramer Co.
- Air Conditioning—**  
R. I. Humidifier and Ventilating Co.
- Albans—**  
Roessler & Hasselacher.
- Architects and Mill Engineers—**  
Sirrline & Co., J. E.
- Ash Handling Equipment—**  
Link-Belt Co.
- Automatic Feeds for Cotton—**  
Saco-Lowell Shops.  
Whitin Machine Works.
- Automatic Lint Cleaners—**  
T. C. Entwistle Co.
- Automatic Stop Motion—**  
Edinac Textile Devices, Inc.
- Automatic Varn Cleaners—**  
Edinac Textile Devices, Inc.
- Ball Bearing—**  
Charles Bond Company  
Fafnir Bearing Co.
- Bales—**  
Dunning & Boschert Press Co., Inc.  
Economy Baler Co.  
Rex Engineering Corp.
- Baling Presses—**  
Dunning & Boschert Press Co., Inc.  
Economy Baler Co.  
Rex Engineering Corp.
- Bands and Tapes—**  
American Textile Banding Co.
- Baskets—**  
Charles Bond Company  
W. T. Lane & Bros.  
Wickwire Spencer Steel Co.
- Beaming and Winding Machinery—**  
Barber-Colman Co.  
Cocker Corporation & Foundry Co.  
Draper Corporation.  
Easton & Burnham Machine Co.  
T. C. Entwistle Co.  
Saco-Lowell Shops.
- Beam Heads—**  
T. C. Entwistle Co.  
Frank Mossberg Corp.  
Mossberg Pressed Steel Corp.  
Saco-Lowell Shops.
- Beams (Section)—**  
Washburn.
- Beams (All Steel)—**  
T. C. Entwistle Co.  
Frank Mossberg Corp.  
Mossberg Pressed Steel Corp.  
Saco-Lowell Shops.
- Beaming Combs—**  
T. C. Entwistle Co.  
Easton & Burnham Machine Co.  
Steel Heddle Mfg. Co.
- Bearings (Roller)—**  
Charles Bond Company  
Hyatt Roller Bearing Co.
- Bearings (Shaft)—**  
Charles Bond Company  
Fafnir Bearing Co.  
Hyatt Roller Bearing Co.  
William Sellers & Co., Inc.  
Wood's T. B. & Sons Co.
- Bearings (Textile Machinery)—**  
Charles Bond Company  
Hyatt Roller Bearing Co.
- Belt Conveyors—**  
Link-Belt Co.  
Wickwire Spencer Steel Co.
- Belt Conveyors (Spiral and Woven)—**  
Wickwire Spencer Steel Co.
- Belt Tighteners—**  
Charles Bond Company  
Link-Belt Co.  
Wood's T. B. & Sons Co.
- Belt Cement—**  
Charles Bond Company  
Edward R. Ladew Co.  
Graton & Knight Mfg. Co.  
E. F. Houghton & Co.  
Edward R. Ladew Co.
- Belt Dressing—**  
Charles Bond Company
- Belt Lacing—**  
Charles Bond Company  
Chicago Belting Co.  
Edward R. Ladew Co.  
E. F. Houghton & Co.  
Graton & Knight Mfg. Co.
- Belt (Link)—**  
Charles Bond Company  
Link-Belt Co.
- Bicarbonate of Soda—**  
Mathieson Alkali Works, Inc.
- Bleacheries—**  
Joseph Bancroft & Sons Co.  
Sayles Finishing Plants, Inc.
- Bleachers—**  
Southern Artalk Bleach & Dye Works, Inc.
- Bleaching Materials—**  
Arabol Mfg. Co.  
Arnold, Hoffman & Co., Inc.  
L. Sonneborn Sons, Inc.  
National Oil Products Co., Inc.  
Bosson & Lane.  
J. B. Ford Co.  
National Aniline & Chemical Co.  
United Chemical Products Co.  
Wolf, Jacques & Co.
- Bobbin Holders—**  
Fournier & Lemoine.
- Bobbins and Spools—**  
Jas. H. Billington Co.  
David Brown Co.  
Courtney, The Dana S. Co.  
Draper Corporation.  
Jordan Mfg. Co.  
Lestershire Spool & Mfg. Co.  
Lowell Shuttle Co.  
Frank Mossberg Corp.  
Mossberg Pressed Steel Corp.  
Walter L. Parker Co.  
Steel Heddle Mfg. Co.
- Bobbin Saving Treatment—**  
The Textilac Co.
- Boxes—**  
Wilts Veneer Co.
- Box Shocks—**  
Wilts Veneer Co.
- Blowers and Blower Systems—**  
Carries Engineering Co.  
Parks-Cramer Co.  
Bretton Mineral Oil—  
Borne, Scrymser Co.
- Brushes—**  
Atlanta Brush Co.  
Curtis & Marble Machine Co.
- Brushing Machines—**  
Curtis & Marble Machine Co.
- Bobbin Stripper—**  
Terrell Machine Co.
- Calenders—**  
H. W. Butterworth & Sons Co.  
B. F. Perkins & Son, Inc.  
Textile Finishing Machinery Co.
- Calender Roll Grinders—**  
B. S. Roy & Son Co.
- Cards—**  
Woonsocket Machine & Press Co., Inc.  
Saco-Lowell Shops.  
Whitin Machine Works.
- Card Clothing—**  
Ashworth Bros.  
Charlotte Mfg. Co.  
Howard Bros. Mfg. Co.  
Wickwire Spencer Steel Co.
- Card Grinding Machinery—**  
Easton & Burnham Machine Co.  
Dronfield Bros.  
T. C. Entwistle Co.  
Roy & Son Co., B. S.  
Saco-Lowell Shops.  
Whitin Machine Works.  
Woonsocket Machine & Press Co., Inc.
- Carrier Aprons—**  
Link-Belt Co.  
Wickwire Spencer Steel Co.
- Caustic Potash—**  
A. Klipstein & Co.
- Caustic Soda—**  
Arnold, Hoffman & Co., Inc.  
A. Klipstein & Co.  
Mathieson Alkali Works, Inc.
- Chain Belts and Drives—**  
Charles Bond Company  
Link-Belt Co.  
Morse Chain Co.
- Chemicals—**  
L. Sonneborn Sons, Inc.  
J. B. Ford Co.  
Hart Products Corp.  
A. Klipstein & Co.  
Mathieson Alkali Works, Inc.  
National Oil Products Co.  
Seydel-Woolley Co.
- Cloth Presses—**  
Economy Baler Co.
- Cloth-Winding Paper Cores—**  
Cores for Cloth-Winding—  
Clutches (Friction)—  
Charles Bond Company  
Textile Finishing Machinery Co.  
Wood's T. B. Sons Co.
- Cloth Winders and Doublers—**  
Curtis & Marble Machine Co.
- Clutch Spindles—**  
Fournier & Lemoine.
- Coal Handling Machinery—**  
Link-Belt Co.
- Combs—**  
Steel Heddle Mfg. Co.
- Combs (Beamers, Wipers, Slashers)—**  
T. C. Entwistle Co.  
Easton & Burnham Machine Co.
- Commission Merchants—**  
Catlin & Co.  
J. H. Lane & Co.  
Mauney-Steel Co.  
Paulson, Linkroum & Co.  
Ridley, Watts & Co.  
The Farish Co.
- Compressors (Air)—**  
Allis-Chalmers Mfg. Co.
- Condensers—**  
Allis-Chalmers Mfg. Co.
- Conditioning Machines—**  
American Moistening Co.
- Conduit Fittings—**  
Chicago Fuse Mfg. Co.
- Cones (Paper)—**  
Sonoco Products Co.
- Cone Vice Couplings—**  
William Sellers & Co., Inc.
- Conveying Systems—**  
Link-Belt Co.
- Coolers (Air)—**  
See Humidifying Apparatus.
- Cotton—**  
Lesser-Goldman Cotton Co.  
Sanders, Orr & Co.  
Stewart Bros. Cotton Co.  
S. B. Tanner, Jr.  
Wm. & York Wilson.
- Cotton Machinery—**  
Ashworth Bros.  
Barber-Colman Co.  
Collins Bros. Machine Co.  
Crompton & Knowles Loom Works.  
Dixon Lubricating Saddle Co.  
Draper Corporation.  
Easton & Burnham Machine Co.  
T. C. Entwistle Co.  
Fales & Jenks Machine Co.  
H. & B. American Machine, Inc.  
Hopdale Mfg. Co.  
Rodney Hunt Machine Co.  
National Ring Traveler Co.  
Roy & Son, B. S.  
Saco-Lowell Shops.  
Southern Spindle & Flyer Co.  
Stafford Co., The  
Terrell Machine Co.  
Tolhurst Machine Works.  
Universal Winding Co.  
Whitin Machine Works.  
Whitinsville Spinning Ring Co.  
Woonsocket Machine & Press Co., Inc.
- Cotton Openers and Lappers—**  
Saco-Lowell Shops.  
Whitin Machine Works.  
Woonsocket Machine & Press Co., Inc.
- Cotton Softeners—**  
Arabol Mfg. Co.  
Arnold, Hoffman & Co., Inc.  
Bosson & Lane.  
Hart Products Corp.  
E. F. Houghton & Co.  
A. Klipstein & Co.  
National Oil Products Co.  
Seydel-Woolley Co.  
L. Sonneborn Sons, Inc.  
Wolf, Jacques & Co.
- Cotton Waste Machinery—**  
Woonsocket Machine & Press Co., Inc.  
Saco-Lowell Shops.  
Whitin Machine Works.
- Counters (Revolution, Hank, Pick, etc)—**  
The Root Co.
- Couplings (Shaft)—**  
Charles Bond Company  
William Sellers & Co., Inc.  
Wood's T. B. Sons Co.
- Crane—**  
Link-Belt Co.
- Dobby Chain—**  
Crompton & Knowles Loom Works  
Rice Dobby Chain Co.
- Doffing Boxes—**  
Rogers Fibre Co.
- Doublers—**  
Saco-Lowell Shops.  
Textile Finishing Machinery Co.  
Universal Winding Co.
- Drawing Rolls—**  
Metallic Drawing Roll Co.
- Drink Fountains—**  
Puro Sanitary Drinking Fountain Co.
- Drives (Silent Chain)—**  
Charles Bond Company  
Link-Belt Co.  
Morse Chain Co.
- Drop Wires—**  
Crompton & Knowles Loom Works.  
Draper Corporation.  
Hopdale Mfg. Co.  
Mossberg Pressed Steel Corp.  
R. I. Warp Stop Equipment Co.
- Dryers (Centrifugal)—**  
Roy & Son Co., B. S.  
Tolhurst Machine Works.
- Dyers—**  
Southern Artalk Bleach & Dye Works, Inc.
- Dyeing, Drying, Bleaching and Finishing Machinery—**  
Cocker Machinery & Foundry Co.  
American Laundry Machinery Co.  
H. W. Butterworth & Sons Co.  
Franklin Process Co.  
Klauder-Weldon Dye Machinery Co.  
Perkins, B. F. & Sons, Inc.  
Rodney Hunt Machine Co.  
Textile Finishing Machinery Co.
- Dyestuffs and Chemicals—**  
Borne, Scrymser Co.  
Bosson & Lane.  
E. I. du Pont de Nemours & Co., Inc.
- General Dyestuff Corp.**  
A. Klipstein & Co.  
National Oil Products Co., Inc.  
Newport Chemical Works  
National Aniline & Chemical Co.  
United Chemical Products Co.  
Wolf, Jacques & Co.
- Dye Works—**  
Franklin Process Co.  
Sayles Finishing Plants, Inc.
- Electric Fans—**  
Allis-Chalmers Mfg. Co.  
General Electric Co.  
Westinghouse Electric & Mfg. Co.
- Electric Hoists—**  
Allis-Chalmers Mfg. Co.  
Link-Belt Co.
- Electric Lighting—**  
Allis-Chalmers Mfg. Co.  
General Electric Co.  
Westinghouse Electric & Mfg. Co.
- Electric Motors—**  
Allis-Chalmers Mfg. Co.  
Charles Bond Company  
Fairbanks-Morse Co.  
General Electric Co.  
Westinghouse Electric & Mfg. Co.
- Electric Supplies—**  
Chicago Fuse Mfg. Co.  
Cooper-Hewitt Electric Co.  
General Electric Co.  
Westinghouse Electric & Mfg. Co.
- Elevators—**  
Link-Belt Co.  
Engineers (Mill)—  
See Architects and Mill Engineers.
- Engineers (Ventilating)—**  
Bahnsen Co.  
Parks-Cramer Co.
- Engines (Steam, Oil, Gas, Pumping)—**  
Allis-Chalmers Mfg. Co.  
Fairbanks-Morse & Co.  
Sydnor Pump & Well Co.  
See also Ventilating Apparatus.
- Expert Textile Mechanic—**  
J. D. Hollingsworth.
- Extractors—**  
American Laundry Machine Co.  
Tolhurst Machine Works.
- Fences (Iron and Wire)—**  
Page Fence and Wire Products Assn.  
Wickwire Spencer Steel Co.
- Fibre Specialties—**  
Rogers Fibre Co.
- Finishers—**  
Sayles Finishing Plants, Inc.
- Finishing Compounds—**  
Arnold, Hoffman & Co., Inc.  
Borne, Scrymser Co.  
Hart Products Corp.  
E. F. Houghton & Co.  
A. Klipstein & Co.  
National Oil Products Co.  
Seydel-Woolley Co.  
L. Sonneborn Sons Co.
- Finishing Machinery—**  
H. W. Butterworth & Sons Co.  
B. F. Perkins & Son, Inc.
- Finishing Machinery—**  
See Dyeing, Drying, Bleaching and Finishing.
- Flat Wall Paint—**  
E. I. du Pont de Nemours & Co., Inc.  
U. S. Gutta Percha Paint Co.
- Flexible Couplings—**  
T. B. Wood's Sons Co.
- Floor Stands—**  
Wood's T. B. Sons Co.
- Fluted Rolls—**  
Collins Bros. Machine Co.  
Fales & Jenks Machine Co.  
Woonsocket Machine & Press Co., Inc.  
Whitin Machine Works.
- Flyer Presses and Overhaulers—**  
Southern Spindle & Flyer Co.  
Whitin Machine Works.  
Woonsocket Machine & Press Co., Inc.
- Flyers—**  
Saco-Lowell Shops.  
Southern Spindle & Flyer Co.  
Whitin Machine Works.
- Frames—**  
Steel Heddle Mfg. Co.
- Friction Clutches—**  
Wood's T. B. Sons Co.  
See Clutches.
- Fuses—**  
Chicago Fuse Mfg. Co.  
Garnett Roll Grinders—  
B. S. Roy & Son Co.
- Gearing (Silent Flexible)—**  
Link-Belt Co.
- Gears—**  
Charles Bond Company  
Dan Gear Co.  
Ferguson Gear Co.
- Gears-Silent—**  
Charles Bond Company  
Ferguson Gear Co.
- Gear Makers—**  
Charles Bond Company  
Ferguson Gear Co.
- Generating Sets—**  
Fairbanks, Morse & Co.
- Grate Bars—**  
Thomas Grate Bar Co.
- Grab Buckets—**  
Link-Belt Co.



# CLASSIFIED LIST OF ADVERTISERS

- Greases—**  
N. Y. & N. J. Lubricant Co.  
L. Sonneborn Sons, Inc.  
**Grinding and Polishing Machines—**  
Gudgeon Rolls—  
Washburn.  
Easton & Burnham Machine Co.  
Roy, B. S. & Son Co.  
**Hangers (Ball and Socket)—**  
Charles Bond Company  
William Sellers & Co., Inc.  
T. B. Wood's Sons Co.  
**Hangers (Shaft)—**  
Charles Bond Company  
Hyatt Roller Bearing Co.  
William Sellers & Co., Inc.  
Wood's T. B. & Sons Co.  
**Hardware Supplies—**  
Textile Mill Supply Co.  
**Harness Twine—**  
Garland Mfg. Co.  
**Harness and Frames—**  
—See Heddles and Frames.  
**Heddles and Frames—**  
Garland Mfg. Co.  
Steel Heddle Mfg. Co.  
L. S. Watson Mfg. Co.  
**Hopper-Feed Hand Stokers—**  
The J. H. Williams Co.  
**Hosiery Dyeing Machinery—**  
Cocker Machinery & Foundry Co.  
**Humidifying—**  
R. I. Humidifier and Ventilating Co.  
**Humidity Control—**  
R. I. Humidifier and Ventilating Co.  
**Humidity and Air Conditioning**  
Aparatus—  
American Moistening Co.  
The Bahnsen Co.  
Carrier Engineering Co.  
Parks-Cramer Co.  
**Humidity Controller—**  
American Moistening Co.  
The Bahnsen Co.  
Carrier Engineering Corp.  
Parks-Cramer Co.  
**Hydro-Extractors—**  
Tolhurst Machine Co.  
**Indigo Dyeing Machinery—**  
H. W. Butterworth & Sons Co.  
Cocker Machine & Foundry Co.  
Textile Finishing Machinery Co.  
**Insurance—**  
Liberty Mutual Insurance Co.  
**Knit Goods Finishing Machines—**  
Kaumagraph Co.  
Morrow Machine Co., The.  
**Knotters—**  
Barber-Colman Co.  
Morrow Machine Co.  
**Knitting Lubricants—**  
National Oil Products Co.  
**Laundry Machinery—**  
Tolhurst Machine Works.  
**Landscape Architect—**  
E. S. Draper.  
**Leather Packings—**  
Charles Bond Company  
Edward R. Ladew Co.  
E. F. Houghton & Co.  
Graton & Knight Mfg. Co.  
**Leather Loom Pickers—**  
Charles Bond Company  
E. H. Jacobs Mfg. Co.  
**Leather Strapping—**  
Charles Bond Company  
Edward R. Ladew Co.  
Graton & Knight Mfg. Co.  
E. F. Houghton & Co.  
**Leather Straps—**  
E. H. Jacobs Mfg. Co.  
**Liquid Chlorine—**  
Arnold, Hoffman & Co., Inc.  
Mathieson Alkali Works, Inc.  
**Looms—**  
Crompton & Knowles Loom Works.  
Draper Corporation.  
Hopdale Mfg. Co.  
Stafford Co., The.  
**Loom Beams and Heads—**  
Frank Mossberg Corp.  
Mossberg Pressed Steel Corp.  
**Loom Drop Wires—**  
Crompton & Knowles Loom Works.  
Hopdale Mfg. Co.  
Mossberg Pressed Steel Corp.  
Steel Heddle Mfg. Co.  
R. I. Warp Stop Equipment Co.  
**Loom Harness—**  
Atlanta Harness & Reed Mfg. Co.  
Garland Mfg. Co.  
Steel Heddle Mfg. Co.  
**Loom Pickers—**  
Jas. H. Billington Co.  
Charles Bond Company  
Edward R. Ladew Co.  
E. H. Jacobs Mfg. Co.  
Garland Mfg. Co.  
Graton & Knight Mfg. Co.  
**Loom Reeds—**  
Atlanta Harness & Reed Mfg. Co.  
Greensboro Loom Reed Co.  
High Point Loom Reed & Harness Co.  
Steel Heddle Mfg. Co.  
**Loom Supplies—**  
Charles Bond Company  
E. H. Jacobs Mfg. Co.  
**Lubricants—**  
Borne, Scrymser & Co.  
E. F. Houghton & Co.  
N. Y. & N. J. Lubricant Co.  
L. Sonneborn Sons, Inc.  
**Lubricators—**  
Malcolm H. Smith Co., Inc.  
**Lug Straps—**  
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**Machinery Enamel—**  
E. L. du Pont de Nemours & Co., Inc.  
**Mangles—**  
H. W. Butterworth & Sons Co.  
Textile Finishing Machinery Co.  
**Markers—**  
Kaumagraph Co.  
Morrow Machine Co.  
**Measuring and Folding Machines—**  
Curtis & Marble Machine Co.  
Textile Finishing Machinery Co.  
**Mercerizing Machinery—**  
Cocker Machinery & Foundry Co.  
H. W. Butterworth & Sons Co.  
Textile Finishing Machinery Co.  
**Metal Paint—**  
E. L. du Pont de Nemours & Co., Inc.  
**Meters—**  
Allis-Chalmers Mfg. Co.  
General Electric Co.  
Westinghouse Electric & Mfg. Co.  
**Mill Architects—**  
—See Architects.  
**Mill Lighting—**  
—See Electric Lighting.  
**Mill Starcases—**  
Arnold, Hoffman & Co., Inc.  
Jas. H. Billington Co.  
Corn Products Refining Co.  
Penick & Ford, Ltd.  
Keefer Starch Co.  
Stein, Hall & Co.  
**Mill Supplies—**  
Charles Bond Company  
Dixon Lubricating Saddle Co.  
E. H. Jacobs Mfg. Co.  
Garland Mfg. Co.  
Textile Mill Supply Co.  
Thomas Grate Bar Co.  
**Mill White—**  
E. L. du Pont de Nemours & Co., Inc.  
**Monosulphur Oil—**  
National Oil Products Co.  
**Napper Clothing—**  
Wickwire Spencer Steel Co.  
**Napper Roll Grinders—**  
B. S. Roy & Son Co.  
Allis-Chalmers Mfg. Co.  
General Electric Co.  
Westinghouse Electric & Mfg. Co.  
**Oil—**  
Arnold, Hoffman & Co., Inc.  
E. F. Houghton & Co.  
A. Kilpstein & Co.  
National Oil Products Co.  
N. Y. & N. J. Lubricant Co.  
L. Sonneborn Sons, Inc.  
Wolf, Jacques & Co.  
**Oil Burners—**  
Scott-Newman Oil Burner Co.  
**Oil (Hyroscope)—**  
National Oil Products Co.  
**Oil (Rayon)—**  
National Oil Products Co.  
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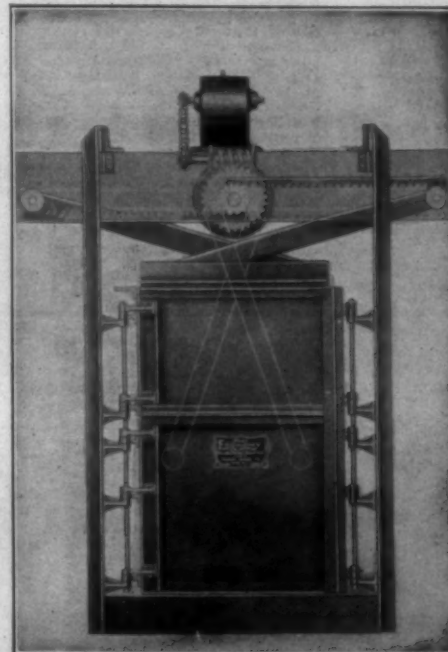
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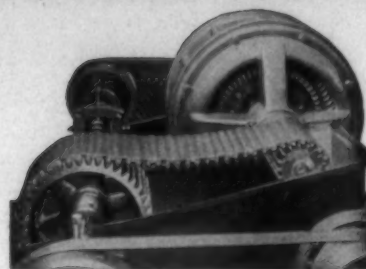
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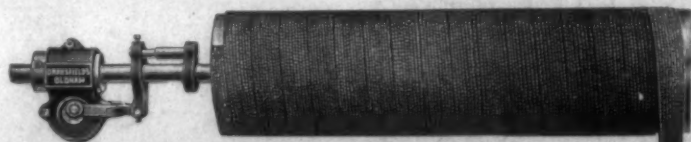
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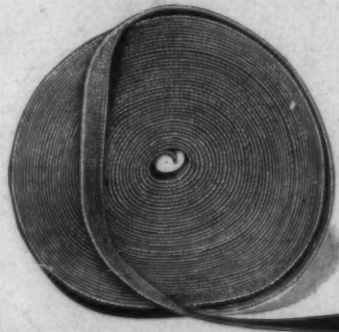
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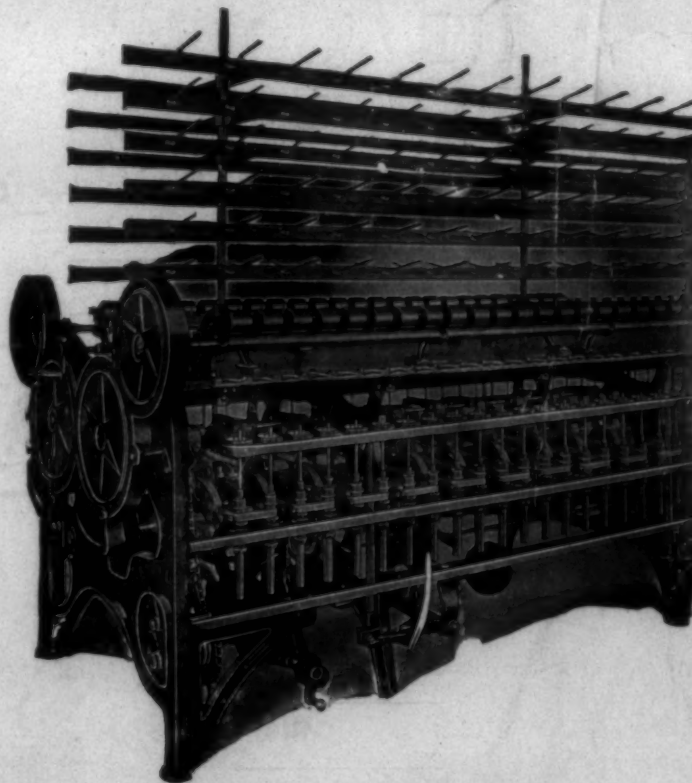

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